University of Alberta

Tephrochronology of middle to late Pleistocene loess in east-central Alaska

by

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ABSTRACT

Chester Bluff, in east-central Alaska is a middle to late Pleistocene loess record with interbedded tephra. Old Crow tephra (~140 ka) and VT tephra (~80 ka), two regional stratigraphic markers, GI tephra (~560 ka) of Fairbanks and Preido Hill tephra of the Klondike are found at Chester Bluff. Presence of these beds will aid in correlating disparate paleoenvironmental records across eastern Beringia. There are 15 new beds, 12 from the Wrangell volcanic field and/or Hayes volcano, one from the Aleutian-Arc/Alaska Peninsula and three unclassified beds. Chester Bluff is normally magnetized, indicating a Bruhnes age (<780 ka). A minimum of two interglacials, one late-Middle Pleistocene, the other early-Middle Pleistocene, and five organic horizons representing interstadials or interglacials, are present. Collectively, sediments at Chester Bluff span most of the middle to late Pleistocene (~ 780 to < ~80 ka). The bluffs represent the most extensive middle-to-late Pleistocene sedimentary record yet established for Yukon or Alaska.

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CHAPTER 1- INTRODUCTION

1.1. Introduction

The unglaciated region of Siberia, Yukon and Alaska, collectively termed Beringia, offers a unique archive of landscape and environmental change over the late Cenozoic (e.g. Westgate et al., 1990; Sher, 1997; Froese et al., 2000). These records, preserved in fossil forest beds, vertebrate fossils and permafrost stratigraphy, are largely limited by the ~50 000 year maximum of radiocarbon dating. Fortunately, western Yukon and central Alaska lie in the fall-out zone of Wrangell and Aleutian-Arc volcanoes, preserving tephra within these sedimentary records. The tephra beds can be broadly categorised into Type I, sourced in the Aleutian Arc-Alaskan Peninsula, and Type II, sourced in the Wrangell Volcanic Field and/or Hayes Volcano from the Alaskan Peninsula (Fig. 1.1; Preece et al., 1992, 1999, 2000).

Tephra beds are ideal stratigraphic markers because of their regional extent and distinctive geochemistry. They can be directly dated by a variety of direct (e.g. fission-track, ^{40}Ar/^{39}Ar) and indirect (paleomagnetism, luminescence dating, radiocarbon) methods. These characteristics make tephrochronology an essential tool for a variety of disciplines (e.g. Newnham et al., 1998; Zazula et al., 2005; Tyron, 2006). They provide a unique chronostratigraphic marker in the geologic record because they are deposited in days to weeks, creating near isochronous surfaces over 100s to 1000s of kilometres. This allows environmental records associated with an individual tephra bed to be compared at their most distal locations. A research approach using a combination of grain-discrete characterization methods (e.g. glass and Fe-Ti oxide major element geochemistry),

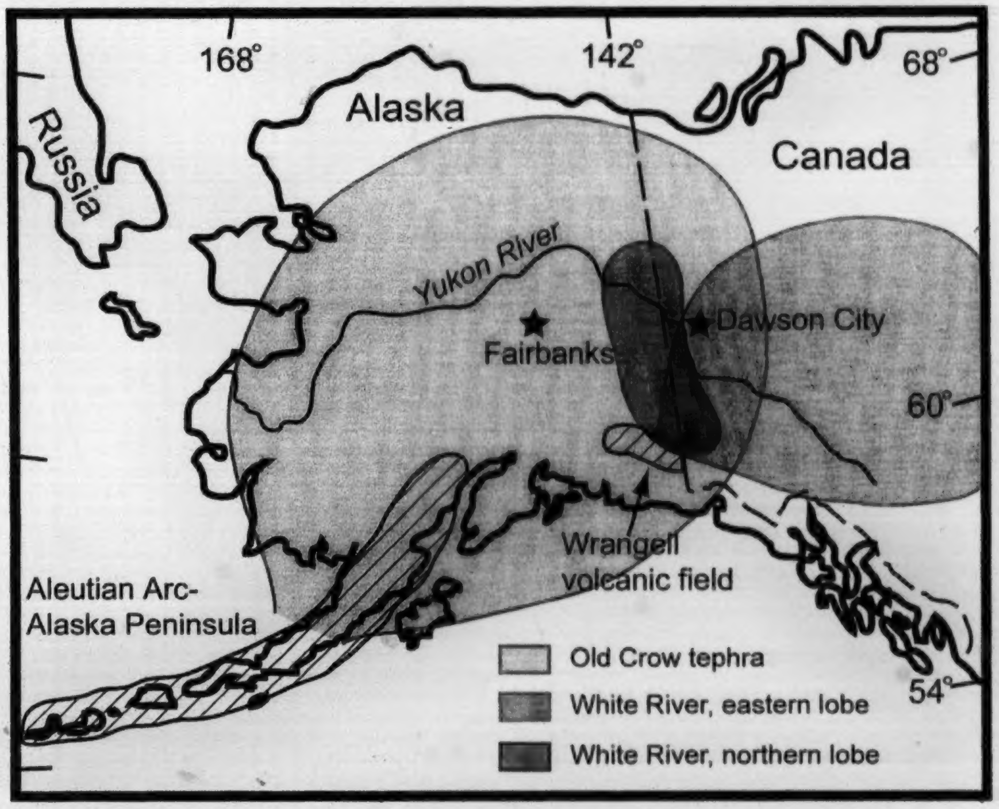

168°
142°
68°
Alaska
Russia
Canada
Yukon River
Fairbanks
Dawson City
60°
Wrangell volcanic field
Aleutian Arc-Alaska Peninsula
54°
Old Crow tephra
White River, eastern lobe
White River, northern lobe

Figure 1.1: Location of Aleutian Arc-Alaska Peninsula and Wrangell volcanic field. The Old Crow (140 ± 10 ka) (Westgate et al., 1990), White River east (~1250 ^{14}C yr B.P.) and White River north (~1700 ^{14}C yr B.P.) (Froese unpublished data) are three tephra beds that are important stratigraphic markers in Yukon and Alaska. Distributions are based on Robinson (2001), Froese et al. (2002) and unpublished data.

mineralogy, stratigraphic setting and associated paleoenvironmental proxy indicators, has been used successfully to develop regional tephrostratigraphic frameworks, for example, in western Europe (e.g. Davies et al., 2002; Boygle, 2004; Mortensen et al., 2005); Japan (e.g. Suzuki, 1996; Machida, 1999); and New Zealand (e.g. Shane et al., 1995; Shane, 2000; Carter et al., 2004; Gomez et al., 2005; Alloway et al., 2007).

Tephra beds have also been used successfully to develop a new understanding of the sedimentary records of the Klondike area, central Yukon, and Fairbanks area of Alaska by providing age control on the vertebrate fossils, forest beds and pollen records from surrounding sediments (e.g. Westgate et al., 1990; Preece at al., 1999, 2000; Froese et al., 2002, 2005).

Historically, the use of tephra beds to correlate stratigraphy was developed earlier in the Fairbanks region, in particular by Péwé (e.g. 1975), who first described important stratigraphic markers such as the Dome and Ester Ash beds. However, the study of tephra beds was not fully embraced due to the difficulty in dating them as well as a lack of a well-established protocol for geochemical characterization. With the emergence of glass fission-track dating in the early 1980s (e.g. Naeser et al., 1982) and the establishment of single glass shard analyses (e.g. Westgate and Gorton, 1981), tephra studies became more prominent, but still limited largely to Alaska and the Old Crow tephra, a major regional stratigraphic marker (e.g. Westgate et al., 1983, 1985, 1990). In the Klondike, tephra beds did not receive a great deal of attention until the late 1990s, with the vast majority of publications emerging after 2000 (e.g. Westgate et al., 2000, 2003a, 2005; Preece et al., 2000; Sandhu et al., 2001; Froese et al., 2002).

Although the Fairbanks and Klondike regions have well developed tephrochronologic records, the integration of these records, and thus development of a robust record of eastern Beringian paleoenvironments, is hampered by having only four tephra beds common to both regions; the Dawson, VT, Old Crow and Mosquito Gulch tephra beds (Preece et al., 1999; Sandhu et al., 2001; Westgate et al., 2003b; Begét et al., 2004). Additionally, there are few tephra records outside of these two regions that could aid in the correlation as well as expanding our present knowledge of eastern Beringia. The main motivation for this research is to address both these problems by exploring an intermediate site in east-central Alaska known as Chester Bluff (Fig. 1.2).

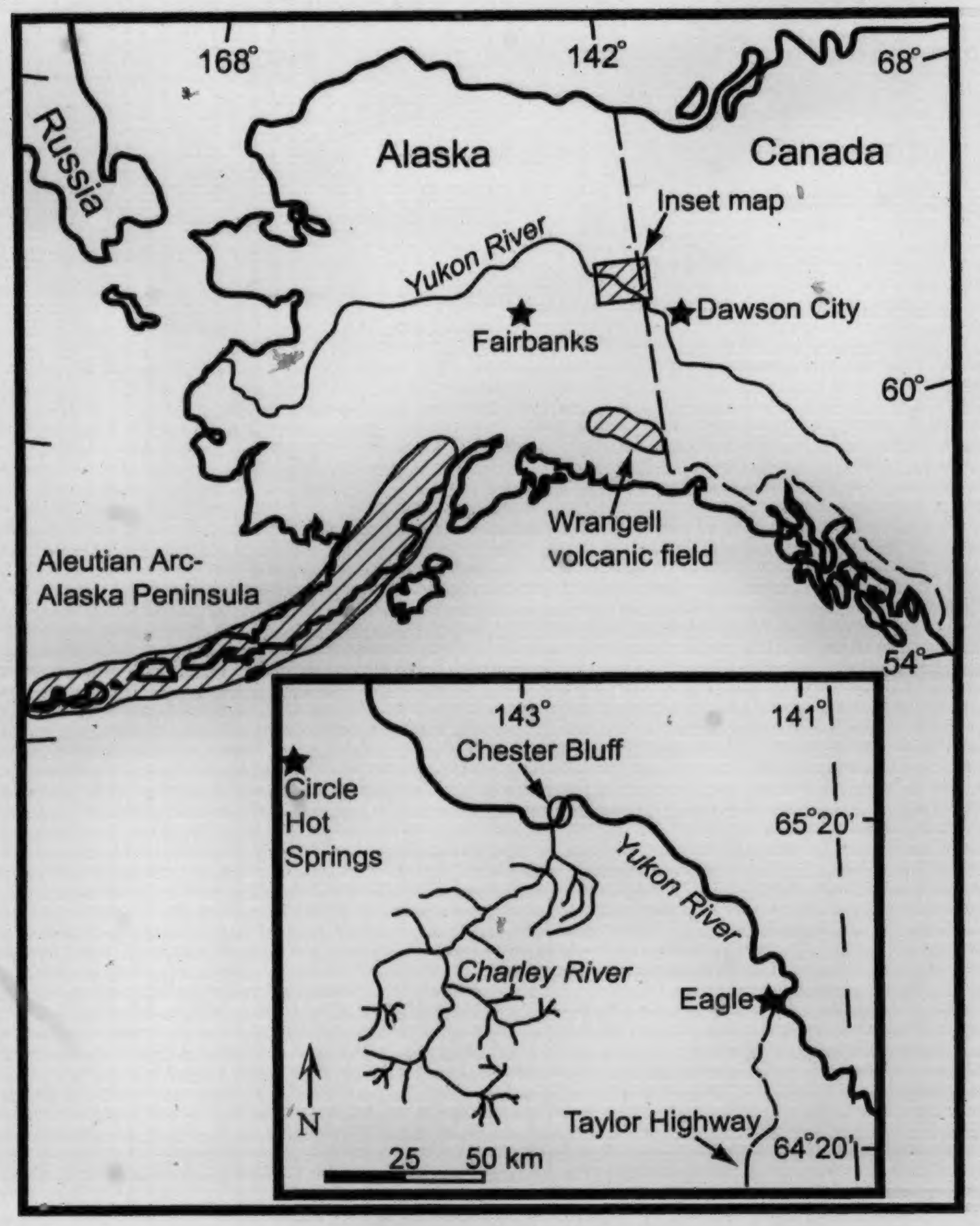

168°
142°
68°
Russia
Alaska
Canada
Inset map
Yukon River
Fairbanks
Dawson City
60°
Wrangell
volcanic field
Aleutian Arc-
Alaska Peninsula
54°
143°
141°
Chester Bluff
Circle
Hot
Springs
65°20'
Yukon River
Charley River
Eagle
N
Taylor Highway
25
50 km
64°20'

Figure 1.2: Location map.

Chester Bluff, in Yukon-Charley Rivers National Preserve, is a terrace along the Yukon River capped by ~ 40 m of loess interbedded with multiple tephra beds. Initial research at this site focused on the outburst flood sediments below the loess and a few of the tephra beds (Froese et al., 2003a). Exploratory work on the loess suggested an exemplary tephra record was probably present at Chester Bluff, including the GI tephra of Fairbanks, dated to 560 ± 80 ka (Froese et al., 2003a).

This thesis is organized into five chapters, including this introduction, two of which will become manuscripts for publication.

Chapter 2: This project involved setting up a tephrochronology lab and developing a set of analytical procedures for distal tephra for the electron microprobe at the University of Alberta. There is a specific methodology involved due to difficulties in the analysis of distal tephra beds. This chapter explores these issues by summarizing the conclusions of years of research as well as lessons learned in this project to provide robust geochemical data. Most of this methodology has been adapted from John Westgate's tephrochronology laboratory at the University of Toronto.

Chapter 3: This chapter uses two well-known tephra beds, the late Holocene northern and eastern lobes of the White River Ash, as a case study in tephrochronology. This work provides the first detailed glass geochemical data for these tephra beds and will be part of a larger manuscript on the geochemistry, age and distribution of the White River Ash.

Chapter 4: This chapter is being prepared as a manuscript and presents in detail the lithostratigraphy, tephrostratigraphy and chronology of Chester Bluff. Duane Froese first recognized the potential of this site during work for his PhD and published that reconnaissance work (Froese et al., 2003a). Initial plant macrofossil data is provided by Nancy Bigelow from University of Alaska, Fairbanks campus (Bigelow, 2003) and additional plant macrofossil work for this thesis is provided by Grant Zazula from the Yukon Paleontology Program. Glass geochemistry of tephra beds collected prior to this study are by John Westgate and Shari Preece. The GI tephra and Charley River tephra were recognized and characterized, as well as five additional tephra beds that have been subsequently named in this study: the Biederman (BT), Coal Creek (CC), Chester Bluff (CB), Kandik River (KR) and Andrew Creek (AC) tephra beds. Froese et al. (2003a,b,c) present some of this work, although most has remained unpublished. In May 2004 I travelled to the University of Toronto to work on this collection with John Westgate and Shari Preece and learn the subtleties of tephrochronological work. At this time I prepared and analyzed uncharacterized Chester Bluff tephra samples and received the collection of characterized Chester Bluff tephra samples stored at the University of Toronto. Two additional field seasons have added eight previously uncharacterized tephra beds and three additional known tephra beds, VT, Old Crow and Preido Hill, as well as placing the tephra beds in detailed stratigraphic context.

Chapter 5: this chapter outlines the conclusions and potential for further research at Chester Bluff.

1.2. References:

Alloway B.V., Lowe, D.J., Barrell, D.J.A., Newnham, R.M., Almond, P.C., Augustinus, P.C., Bertler, N.A.N., Carter, L., Litchfield, N.J., McGlone, M.S., Shulmeister, J., Vandergoes, M.J., Williams, P.W., NZ-INTIMATE members, 2007. Towards a climate event stratigraphy for New Zealand over the past 30 000 years. Journal of Quaternary Science 20, 9-35.

Begét, J.E., Pedersen, T.F., Muhs, D., 2004. Terrestrial-marine correlation of the 24 kyr BP Dawson tephra: implications for dispersal and preservation of Alaskan tephra deposits. American Geophysical Union Annual Fall Meeting, San Francisco, California, Fall Meeting Supplement 85(47), Abstract V21C-02.

Bigelow, N., 2003. Latest middle Pleistocene (Stage 7) interglacial. In: Froese, D. G, Matheus, P., Rasic, J. (Eds), Beringian environments and heritage of the upper Yukon River: a field workshop from Dawson City, Yukon through Yukon Charley Rivers National Preserve, Alaska. Beringian Heritage International Park, the National Parks Service and the International Arctic Research Center, University of Alaska, Fairbanks, pp. 50-53.

Boygle, J., 2004. Towards a Holocene tephrochronology for Sweden: geochemistry and correlation with the North Atlantic tephra stratigraphy. Journal of Quaternary Science 19, 103-109.

Carter, C., Alloway, B., Shane, P., Westgate, J., 2004. Deep ocean record of major late Cenozoic rhyolitic eruptions from New Zealand. New Zealand Journal of Geology and Geophysics 47, 481-500.

Davies, S.M., Branch , N.P., Lowe, J.J., Turney, C.S.M., 2002. Towards a European tephrochronological framework for Termination 1 and the Early Holocene. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences 360, 767-802.

Froese, D.G., Barendregt, R.W., Enkin, R.J., Baker, J., 2000. Paleomagnetic evidence for multiple Late Pliocene - Early Pleistocene glaciations in the Klondike area, Yukon Territory. Canadian Journal of Earth Sciences 37, 863-877.

Froese, D., Westgate, J., Preece, S., Storer, J. 2002. Age and significance of the Late Pleistocene Dawson tephra in eastern Beringia. Quaternary Science Reviews 21, 2137-2142.

Froese, D.G., Smith, D.G., Westgate, J.A., Ager, T.A., Preece, S.J., Sandhu, A., Enkin, R.J., Weber, F., 2003a. Recurring middle Pleistocene outburst floods in east-central Alaska. Quaternary Research 60, 50-62.

Froese, D.G., Smith, D.G., Westgate, J.A., Preece, S.J., Sandhu, A., Enkin, R.J., Weber, F., 2003b. Chester Bluff: Middle Pleistocene catastrophic floods along the Charley and Yukon Rivers. In: Froese, D. G, Matheus, P., Rasic, J. (Eds), Beringian environments and heritage of the upper Yukon River: a field workshop from Dawson City, Yukon through Yukon Charley Rivers National Preserve, Alaska. Beringian Heritage International Park, the National Parks Service and the International Arctic Research Center, University of Alaska, Fairbanks, pp. 41-46.

Froese, D.G., Ager, T., Bigelow, N., Westgate, J.A., Preece, S.J., Matheus, P., 2003c. Long paleoenvironmental records and their connections across eastern Beringia. In: Froese, D. G, Matheus, P., Rasic, J. (Eds), Beringian environments and heritage of the upper Yukon River: a field workshop from Dawson City, Yukon through Yukon Charley Rivers National Preserve, Alaska. Beringian Heritage International Park, the National Parks Service and the International Arctic Research Center, University of Alaska, Fairbanks, pp. 48-50.

Froese, D.G., Westgate, J.A., Alloway, B.V., 2005. Field Trip Guide for the International Conference and Workshop of Tephrochronology and Volcanism: Dawson City, July 31st - 8th, 2005. Institute of Geological and Nuclear Sciences Limited, Lower Hutt, New Zealand.

Gomez, B., Carter L., Trustrum N.A., Palmer, A.S., Roberts, A.P., 2004. El Niño–Southern Oscillation signal associated with middle Holocene climate change in intercorrelated terrestrial and marine sediment cores, North Island, New Zealand. Geology 32, 653-656.

Machida, H., 1999. The stratigraphy, chronology and distribution of distal marker-tephras in and around Japan. Global and Planetary Change 21, 71-94.

Mortensen, A.K., Bigler, M., Grönvold, K., Steffensen, J.P., Johnsen, S.J., 2005. Volcanic ash layers from the Last Glacial Termination in the NGRIP ice core. Journal of Quaternary Science 20, 209-219.

Naeser, N., Westgate, J., Hughes, O., Péwé, T., 1982. Fission-track ages of late Cenozoic distal tephra beds in the Yukon Territory and Alaska. Canadian Journal of Earth Sciences 19, 2167–2178.

Newnham R.M., Lowe D.J., McGlone M.S., Wilmshurst J.M., Higham T.F., 1998. The Kaharoa tephra as a critical datum for earliest human impact in northern New Zealand. Journal of Archaeological Science 25, 533-544.

Péwé, T.L., 1975. Quaternary stratigraphic nomenclature in unglaciated central Alaska. Geological Professional Paper 862.

Preece, S.J., Westgate, J.A., Gorton, M.P., 1992. Compositional variation and provenance of late Cenozoic distal tephra beds, Fairbanks area, Alaska. Quaternary International 13/14, 97-101

Preece, S.J., Westgate, J.A., Stemper, B.S., Péwé, T.L., 1999. Tephrochronology of late Cenozoic loess at Fairbanks, central Alaska. Geological Society of America Bulletin 111, 71-90.

Preece, S.J., Westgate, J.A., Alloway, B.V., Milner, M.W., 2000. Characterization, identity, distribution, and source of late Cenozoic tephra beds in the Klondike district of the Yukon, Canada. Canadian Journal of Earth Sciences 37, 983-996.

Robinson, S.D., 2001. Extending the Late Holocene White River Ash distribution, Northwestern Canada. Arctic 54, 157-161.

Sandhu, A.S., Westgate, J.A., Preece, S.J., Froese, D.G., 2001. Glass fission-track ages of late Cenozoic distal tephra beds in the Klondike district, Yukon Territory. In: Emond, D.S., Weston, L.H. (Eds), Yukon Exploration and Geology 2000. Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, pp. 247-256.

Shane, P., 2000. Tephrochronology: a New Zealand case study. Earth Science Reviews, 49, 223-259.

Shane, P., Froggatt, P., Black, T., Westgate, J., 1995. Chronology of Pliocene and Quaternary bioevents and climatic events from fission-track ages on tephra beds, Wairarapa, New Zealand. Earth and Planetary Science Letters 130, 141-154.

Sher, A., 1997. Yedoma as a store of paleoenvironmental records in Beringia. Beringian Paleoenvironments Workshop, Program and Abstracts, Florissant, Colorado, September 20-23, pp. 140-144.

Suzuki, T., 1996. Chemical analysis of volcanic glass by energy dispersive x-ray spectrometry with JEOL JED-2001 and JSM-5200: analytical procedures and application. Geographical Reports of Tokyo Metropolitan University 31, 27-36.

Tyron, C.A., 2006. "Early" Middle Stone Age lithic technology of the Kapthurin Formation (Kenya). Current Anthropology 47, 367-375.

Westgate, J.A., Gorton, M.P., 1981. Correlation techniques in tephra studies. In: Self, S., Sparks, R.S.J. (Eds), Tephra studies: proceedings of the NATO Advanced Study Institute, tephra studies as a tool in Quaternary research. D. Reidel Publishing Company, Dordrecht, pp. 73-94.

Westgate, J.A., Hamilton, T.D., Gorton, M.P., 1983. Old Crow tephra: A new Pleistocene stratigraphic marker across north-central Alaska and Western Yukon Territory. Quaternary Research 19, 38-54.

Westgate, J.A., Walter, R.C., Pearce, G.W., Gorton, M.P., 1985. Distribution, stratigraphy, petrochemistry, and palaeomagnetism of the late Pleistocene Old Crow tephra in Alaska and the Yukon. Canadian Journal of Earth Sciences 22, 893-906.

Westgate, J.A., Stemper, B.A., Péwé, T.L., 1990. A 3 m.y. record of Pliocene-Pleistocene loess in interior Alaska. Geology 18, 858-861.

Westgate, J.A., Preece, S.J., Kotler, E., Hall, S., 2000. Dawson tephra: a prominent stratigraphic marker of Late Wisconsinan age in west-central Yukon. Canadian Journal of Earth Sciences 37, 621-627.

Westgate, J.A., Sandhu, A.S., Preece, S.J. and Froese, D.G., 2003a. Age of the gold-bearing White Channel Gravel, Klondike district, Yukon. In: Emond, D.S., Lewis, L.L., (Eds), Yukon Exploration and Geology. Exploration and Geological Services Division, Yukon Region, Yukon, Indian and Northern Affairs Canada, pp. 241-250

Westgate, J.A., Preece, S.J., Péwé, T.L., 2003b. The Dawson Cut Forest Bed in the Fairbanks area, Alaska, is about two million years old. Quaternary Research 60, 2-8.

Westgate, J.A., Preece, S.J., Froese, D.G., Pearce, N., Alloway, B., 2005. Late Cenozoic tephrochronology of the Klondike area. In: Froese, D.G., Westgate, J.A., Alloway, B.V. (Eds), Field trip guide of the International Field Conference and Workshop of

Tephrochronology and Volcanism: Dawson City, Yukon Territory, Canada. Institute of Geological and Nuclear Sciences Limited, Lower Hutt, New Zealand, pp. 43-51.

Zazula, G.D, Froese, D.G., Westgate, J.A., La Farge, C., Mathewes, R.W., 2005. Paleoecology of beringian "packrat" middens from central Yukon Territory, Canada. Quaternary Research 63, 189-198.

CHAPTER 2- METHODOLOGY

2.1. Introduction

The basic assumption of tephrochronology is that a specific eruption and its distal products (tephra) can be identified confidently and correlated between sites 10-1000s kms apart, establishing isochronous markers in the geologic record. While this goal may be achieved simply in a region with relatively few beds, or within a specific time interval, the challenge increases greatly, proportional to the number of tephra beds and time depth of record considered, and becomes even more challenging when individual vents produce multiple, similar, tephra beds over time.

Understanding the paleoenvironmental records of eastern Beringia, a region that encompasses most of Alaska and north-central Yukon Territory, is dependent on distal tephra beds found in the sediments of this region. Distal tephra, sourced from the Aleutian Arc-Alaska Peninsula and Wrangell volcanic field, are essential to date and correlate sedimentary sequences that are often beyond the limit of radiocarbon dating. However, tephra records of eastern Beringia are complex because they span several million years and often contain many tephra beds from single or closely related sources.

This project aims to establish an extensive record of tephra beds from the middle to late Pleistocene sedimentary sequence at Chester Bluffs in Yukon-Charley Rivers National Preserve, east-central Alaska. To successfully achieve this goal it is important to understand the methodology and associated difficulties involved in the analysis of distal tephra beds. This paper discusses problems specific to distal tephra, summarizes conclusions of years of research and presents the methodology used in this study.

2.2. A general overview of analytical problems with distal tephra

Successful correlation of tephra beds requires well-defined and reproducible geochemical data. Early work on geochemical analysis of tephra beds was primarily by characterization of bulk samples (both major and minor elements) by X-ray fluorescence (XRF) (e.g. Lerbekmo and Campbell, 1969) and Instrumental Neutron Activation Analysis (INAA) (e.g. Borchardt et al., 1972; Preece et al., 1992). Major limitations of XRF and INAA include the large amounts of material required for analysis, 0.5-3 g of pure glass for XRF and 0.2-1 g for INAA, and the use of a bulk separate (Sarna-Wojcicki et al., 1979; Sarna-Wojcicki and Davis, 1991). This is problematic since distal tephra beds are susceptible to post-depositional effects, such as contamination with detrital material, foreign tephra and/or chemical alteration. As well, glass often contains inclusions of other minerals, and both glass and Fe-Ti oxides can have more than one distinct chemical population. Even with a glass separate, it is usually difficult to avoid contaminants, such as microcrysts in glass (Table 2.1), and results may simply be an average of a trend or multiple populations (Fig. 2.1).

The application of electron microprobe analysis (EMPA) to characterize the major elements in tephra beds was a major step forward in tephrochronology (Smith and Westgate, 1969). EMPA overcame many of problems associated with bulk methods by making it possible to analyze single glass shards, but it has also created a new problem. Glass that contains alkali elements (e.g. Na, K), such as volcanic glass, was recognised early in EMPA studies to be unstable and difficult to analyze (Varshneya et al., 1966; Vassamillet and Caldwell, 1969). There has been considerable work to resolve this issue (e.g. Nielsen and Sigurdsson, 1981), but many of the solutions, such as a larger beam

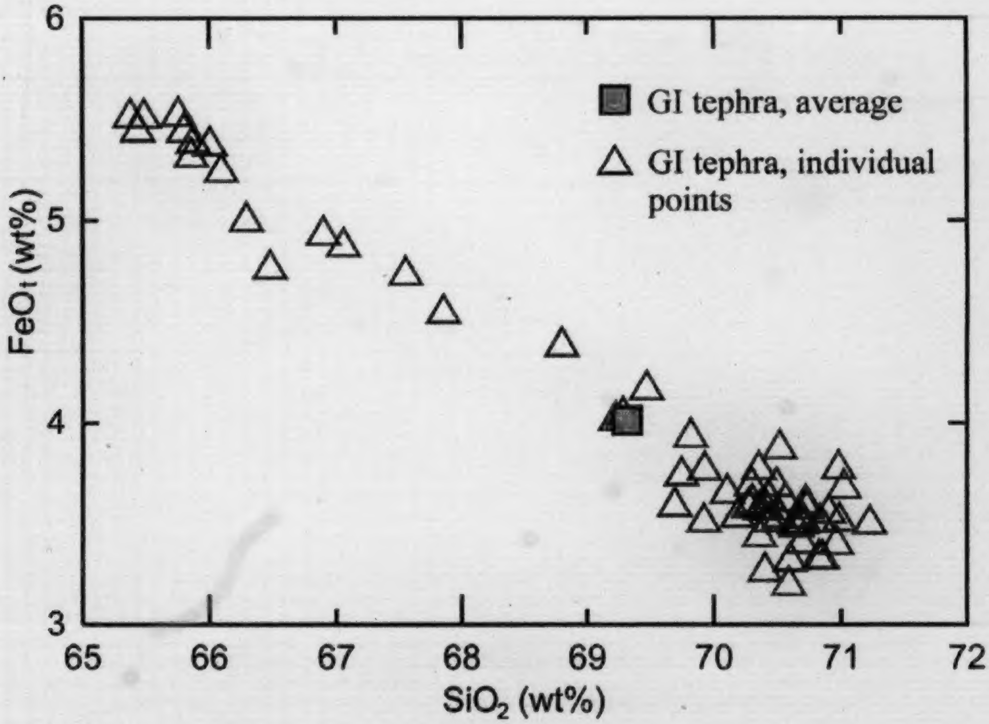


Figure 2.1: GI tephra has a distinctive lower silica population that makes it relatively easy to recognize. The average hides the range, a potential limitation of bulk methods of characterization like XRF.

Table 2.1: Comparison of electron microprobe and X-ray fluorescence data for the White River Ash beds. The inclusion of contaminants, such as feldspar, has the effect of lowering the SiO_2 and increasing Al_2O_3.

Oxides (wt%)	White River North		White River East		White River [a] (XRF)
SiO_2	73.72	(1.30)	74.52	(0.88)	67.4
TiO_2	0.21	(0.06)	0.18	(0.05)	0.5
Al_2O_3	14.47	(0.61)	14.15	(0.46)	15.1
FeO_t	1.65	(0.25)	1.40	(0.21)	4.2
MnO	0.06	(0.03)	0.05	(0.03)	ND
MgO	0.36	(0.09)	0.30	(0.09)	2
CaO	1.89	(0.37)	1.68	(0.21)	4.1
Na_2O	4.13	(0.19)	4.03	(0.18)	4.1
K_2O	3.19	(0.16)	3.36	(0.23)	2.5
Cl	0.33	(0.05)	0.34	(0.04)	ND
H_2Od	2.39	(1.61)	2.57	(1.43)	ND
n	97		289		66

[a] Lerbeckmo and Campbell 1969; proximal and distal samples of both lobes

Note: Major element analyses done on a JEOL superprobe operating at a 15keV accelerating voltage, 10 μm beam diametre, and 6nA beam current at the University of Alberta. Secondary standardization on obsidian UA 5831, recast to 100% on a water-free basis; (#) = standard deviation; n = number of analyses; FeOt = total iron oxide as FeO; H_2Od = water by difference.

ND- no data.

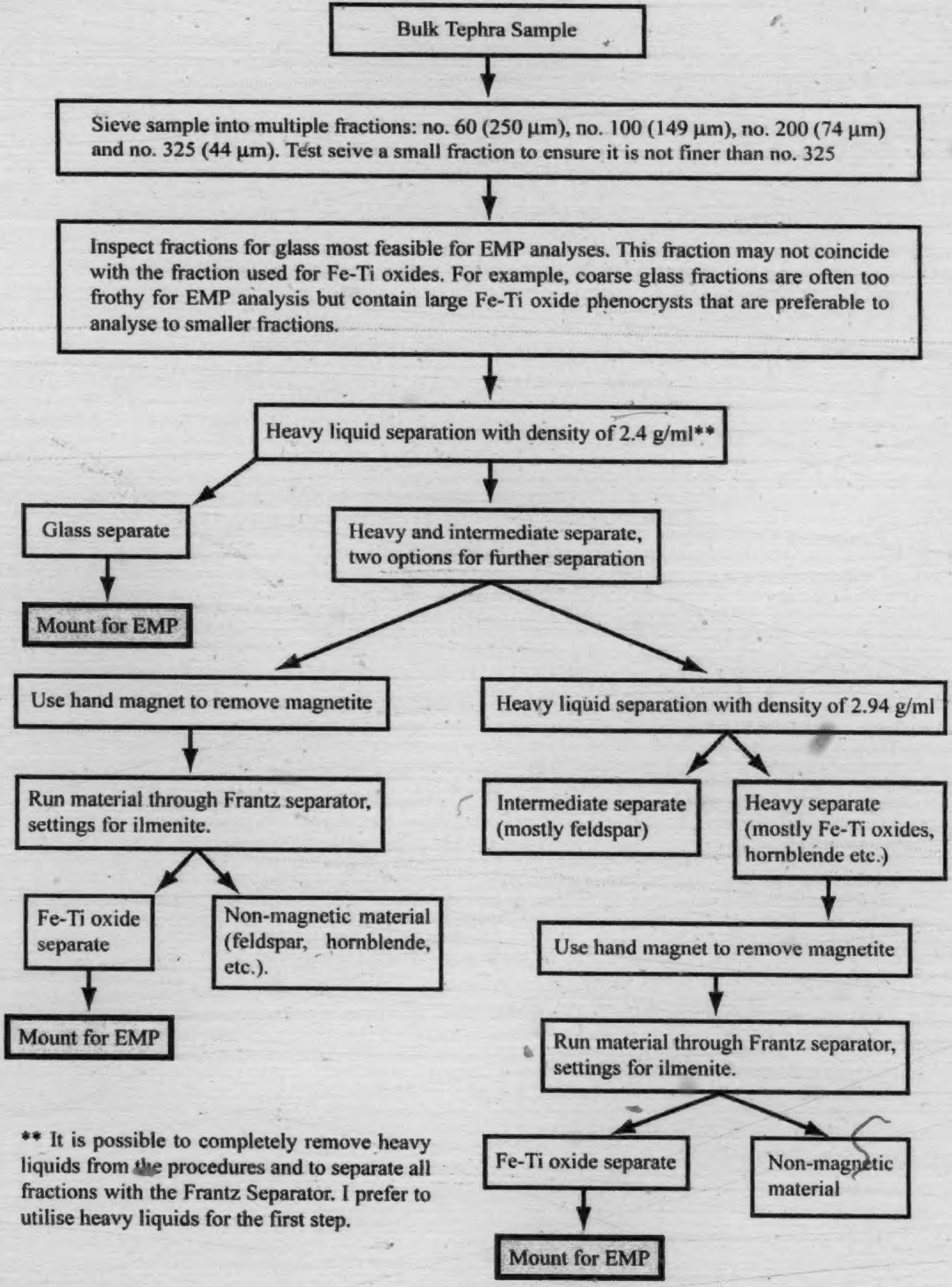
diameter between 15-20 μm, are typically not applicable for the fine-grained glass recovered from distal tephra beds (Morgan and London, 1996).

Despite this problem, it is possible to obtain consistent and reproducible major element glass data with EMPA. However, correlations cannot rely on geochemical data alone and robust correlations must be based on multiple criteria, including: stratigraphy, paleoenvironmental data, paleomagnetism, radiometric and/or isotopic ages, and physiochemical properties of the glass shards and phenocrysts, in particular Fe-Ti oxides (Westgate and Gorton, 1981, Westgate and Naeser, 1995). In this chapter I present the analytical protocol developed for EMPA analyses of glass and Fe-Ti oxides in this study, and the process adopted to obtain the separates for analyses. Figure 2.2 summarizes these steps in a flow chart, with each step discussed in the following sections. This chapter also provides a detailed description of the EMP and a step-by-step explanation of the mathematical reduction of the raw data.

2.3. Preparation techniques

Distal tephra is often contaminated and its small grain size, as well as the unstable nature of glass itself, makes it prone to chemical alteration. As well, single grain analyses are carried out with greater ease when the glass has been separated from all other material in the sample. This requires a simple, yet careful, series of steps in the preparation of tephra for EMPA.

Bulk samples are initially wet sieved into multiple size fractions, generally using U.S. sieve series no. 60 (250 μm), no. 100 (149 μm), no. 200 (74 μm) and no. 325 (44 μm). It is advisable to test a small fraction of the sample if it is suspected that the tephra


Bulk Tephra Sample
Sieve sample into multiple fractions: no. 60 (250 μm), no. 100 (149 μm), no. 200 (74 μm) and no. 325 (44 μm). Test seive a small fraction to ensure it is not finer than no. 325
Inspect fractions for glass most feasible for EMP analyses. This fraction may not coincide with the fraction used for Fe-Ti oxides. For example, coarse glass fractions are often too frothy for EMP analysis but contain large Fe-Ti oxide phenocrysts that are preferable to analyse to smaller fractions.
Heavy liquid separation with density of 2.4 g/ml**
Glass separate
Mount for EMP
Heavy and intermediate separate, two options for further separation
Use hand magnet to remove magnetite
Run material through Frantz separator, settings for ilmenite.
Fe-Ti oxide separate
Non-magnetic material (feldspar, hornblende, etc.).
Mount for EMP
Heavy liquid separation with density of 2.94 g/ml
Intermediate separate (mostly feldspar)
Heavy separate (mostly Fe-Ti oxides, hornblende etc.)
Use hand magnet to remove magnetite
Run material through Frantz separator, settings for ilmenite.
Fe-Ti oxide separate
Non-magnetic material
Mount for EMP

** It is possible to completely remove heavy liquids from the procedures and to separate all fractions with the Frantz Separator. I prefer to utilise heavy liquids for the first step.

Figure 2.2: A flow chart describing the order of steps in the preparation of tephra beds for analyses by EMP.

may be finer than 44 μm. If a smaller fraction is present, the sample is dry sieved and finer material is captured in a pan. When dried, fractions are assessed under a stereoscopic microscope to determine which size fractions contain glass most suitable for EMPA. Occasionally, larger size fractions of tephra are dominated by frothy inflated pumice, which is often the case of Wrangell sourced-tephra beds. This material is difficult to probe and typically only smaller fractions will contain glass thick enough for analysis. However, if thicker glass walls exist in the pumice, it may be possible to concentrate glass from the pumice using an ultrasonic probe. The ultrasonic probe pulverizes the thin walls of the pumice, exposing thicker glass, and usually only takes 30 seconds to two minutes depending on the strength of the probe.

When sieved fractions have been assessed, glass is separated using a density separation with heavy liquids. Several heavy liquids (Table 2.2) are available; tetrabromoethane (TBE) was used in this study. TBE density is adjusted by dilution using acetone. Glass is separated at a density of ~2.4 g/ml, which can be measured accurately with a sink-float, or estimated using a piece of obsidian and feldspar. To determine the heavy liquid density without a sink-float, acetone is added until the feldspar sinks and the obsidian slowly rises to, or near to, the surface of the heavy liquid. Intermediates (e.g. feldspar) can then be separated with a density ~2.8 g/ml to 2.9 g/ml, the undiluted density of TBE. The heavy fraction of the separate will contain Fe, Mg and Ti rich minerals such as pyroxenes, amphiboles and Fe-Ti oxides.

Alternatively, glass and heavy minerals may be separated using a Frantz separator. A Frantz separator consists of a large copper coil along a split feeder tube. The host material is placed into a funnel that feeds into the split feeder tube. A current is run

Table 2.2: Summary of potential heavy liquids for use in tephrochronology

Heavy Liquid	Max. Density (g/ml)	Advantages	Disadvantages
Tetrabromoethane (TBE)	2.96	Inexpensive, reusable, can separate glass, feldspar and heavy minerals	Toxic
Sodium polytungstate (SPT)	2.8*	Not toxic, reuseable	Viscosity limits use to glass separation, expensive
Lithium metatungstate (LMT)	2.8*	Not toxic, reuseable	Viscosity limits use to glass separation, expensive
Lithium heteropolytungstate (LST)	2.9-3.6**	Not toxic, reuseable	Need to alter temperature to separate material heavier than glass, expensive

* Can be denser, but there is an exponential increase in viscosity beyond 2.8 g/ml that compromises separation and makes filtering very difficult.

** Maximum density vs. viscosity can be varied by temperature, at room temperature the maximum is 2.9 g/ml.

through the coil to create a magnetic field, the current set to the appropriate amperage to separate a particular mineral. The magnetised coil separates the targeted mineral by pulling it towards the magnet while the rest of the material falls into the other half of the tube. Both the target mineral and remaining host material then empty into separate vessels at the end of each respective half of the feeder tube. In this study heavy liquids were used to separate glass and the Frantz separator was used for other fractions. Magnetite should be extracted with a hand magnet before using the Frantz separator as it will clog the machine. Fe-Ti oxides are specifically targeted in tephrochronology, as they are useful for characterization of tephra (e.g. Lerbekmo et al., 1975). Settings for the Frantz separator are after Rosenblum and Brownfield (1999); side slope 15°, forward 25° and 0.2 A current.

Following the separation of glass and/or Fe-Ti oxides, samples are mounted for analysis by the electron microprobe (EMP). There are many options for mounting. In this study disks with a thickness of ~3.6 mm were cut from an acrylic rod of 2.54 cm diameter. Four holes are drilled in each puck, with each hole used for an individual tephra sample. Once the sample is in place epoxy is used to fill the hole. After hardening, the pucks are then polished and coated with carbon before analysis (Fig. 2.3).

2.4. The Electron Microprobe

The EMP is the standard tool for the characterization of tephra beds. The EMP is a cost-efficient, fast (≤ 3 minutes per point) and grain-discrete method. Another advantage is that with the use of backscattered electrons, samples can be imaged, making it possible to avoid contaminants such as phenocrysts or microcrysts within individual

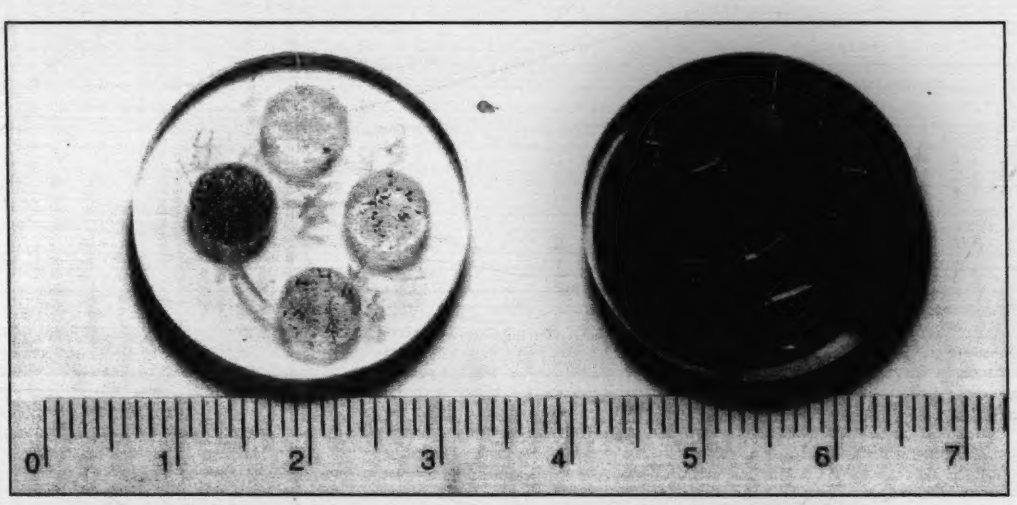


Figure 2.3: Pucks used for EMPA. The one on the right is coated with carbon. The numbers and arrows are added to locate each sample properly, with sample numbers etched on the puck edge.

glass shards. A beam diameter of < 1μm is possible, although glass analyses with a beam diameter < 10μm are not recommended. Therefore, EMP analyses will not disguise trends, multiple populations or other features that may be important when attempting to correlate tephra beds. The main limiting feature of the EMP is a detection limit that is, at best, ~100 ppm, limiting analyses to major and minor elements (Wittke, 2003).

2.4.1. System details

The EMP uses an adjustable focused beam of electrons to excite a sample to release X-rays characteristic of elements present. Electrons produced from a filament (often tungsten) with a potential of ~10 to 30 keV are accelerated by an anode plate. The electron beam current of 10-200 nA is ~1000 times greater than the current in a scanning electron microscope (SEM). The beam removes electrons from shells K, L and/or M to a higher energy level. The return of the electrons to their original state will produce characteristic X-rays (Fig 2.4, 2.5). A high beam current ensures enough X-rays are

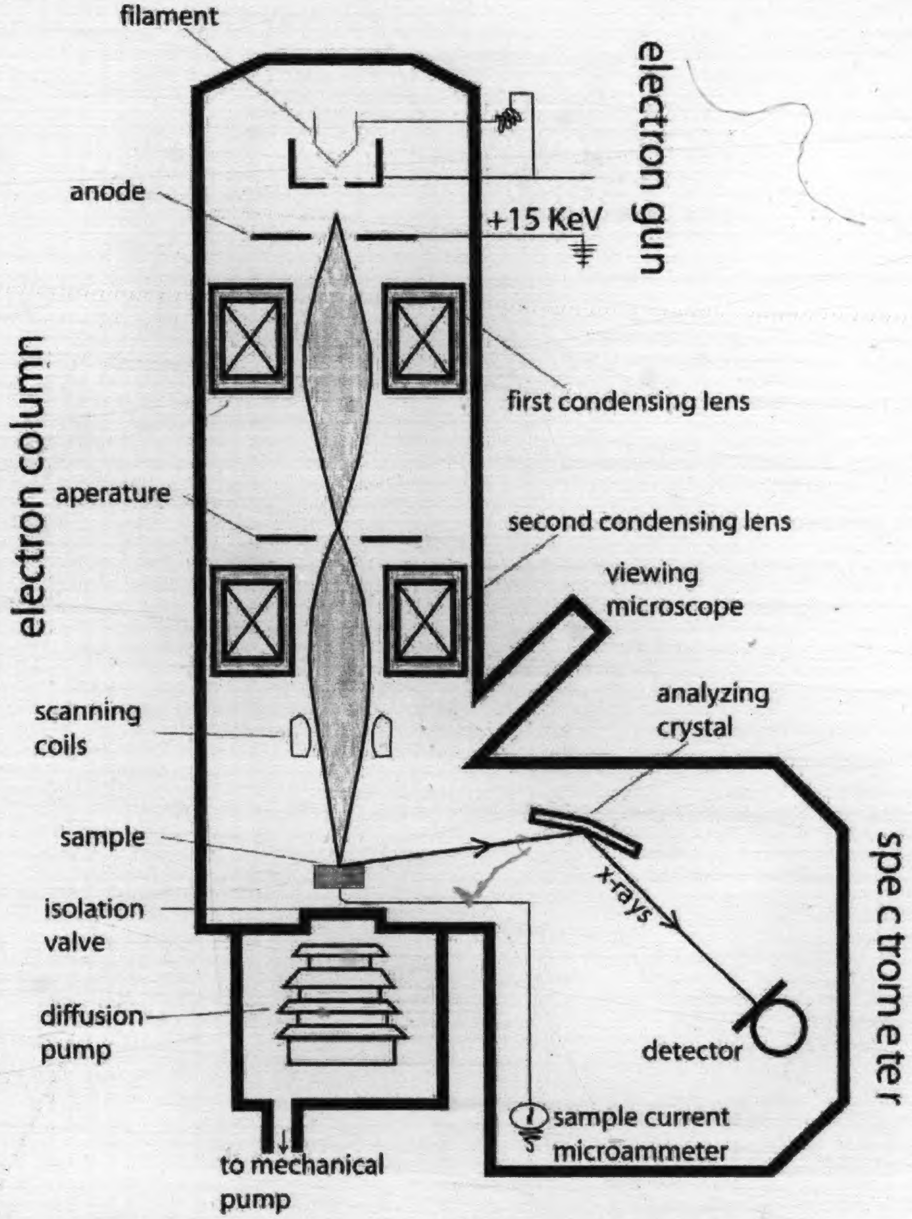

filament
electron gun
anode
+15 KeV
electron column
first condensing lens
aperature
second condensing lens
viewing
microscope
analyzing
crystal
scanning
coils
sample
x-rays
spe c trom e te r
isolation
valve
diffusion
pump
detector
sample current
microammeter
to mechanical
pump

Figure 2.4: Simplified schematic of an electron microprobe, based on a Cameca model (modified from Wittke, 2003).

produced to allow quantitative analyses. The main limiting factor of the EMP is in the analyses of light elements, which release low energy X-rays that may be absorbed by the window of the counter. Routine quantitative analyses include elements from fluorine (Z=9) to uranium (Z=92). Modifications can be made to extend the range, but anything less than boron (Z=3) is not directly measurable (Wittke, 2003; Reed, 2005).

Other products of electron beam bombardment include cathodoluminescence, backscattered electrons, secondary electrons and Auger electrons (Fig. 2.5). Backscattered electrons are used to image the sample and pick points for analyses. Other products can be used for specialized types of analysis, for example, 'Auger analysis' for elements of Z< 10 (Reed, 2005). No specialized analyses were carried out in this study.

There are two methods of analysis within an EMP system: energy dispersive and wavelength dispersive spectrometry (EDS and WDS, respectively). EDS is generally used as a qualitative method that captures X-rays with a solid-state detector that produces proportional energy pulses and converts them to a spectrum (Reed, 2005). It is a rapid method to roughly determine the composition of a sample and is useful in grain-discrete analyses when the user needs to, for example, distinguish between magnetite and ilmenite. It is also possible to obtain quantitative analyses, but the number of counts and time required to attain those counts are prohibitive (Reed, 2005; Mateev, pers. comm. 2005). WDS is employed for quantitative analysis, especially for elements with low concentrations. In WDS, X-rays emitted from the sample are refracted by analyzing crystals according to their wavelengths (Fig. 2.4). The crystals (e.g. TAP, PET and LiF; each for a different range of wavelengths) are oriented to refract only the X-rays of elements being analyzed towards a proportional counter. The counter consists of a gas-

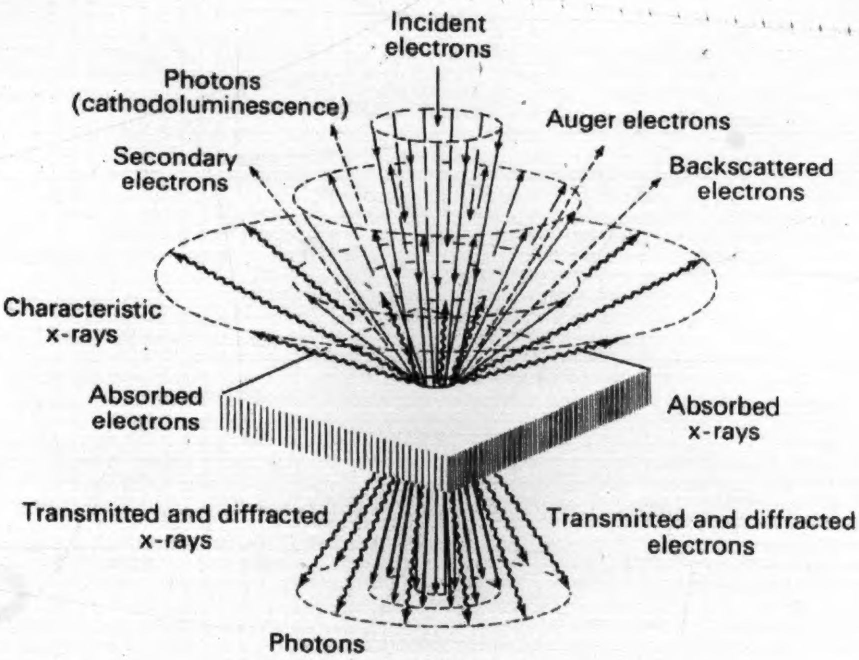

Incident electrons
Photons (cathodoluminescence)
Auger electrons
Secondary electrons
Backscattered electrons
Characteristic x-rays
Absorbed electrons
Absorbed x-rays
Transmitted and diffracted x-rays
Transmitted and diffracted electrons
Photons

Figure 2.5: Products of electron bombardment on a sample (from Murr, 1982).

filled tube containing an anode wire and counter (cathode). The gas is ionized by the X-rays, creating electrons that flow towards the anode, resulting in further ionization and amplification of the signal. When the electrons reach the anode wire there is a drop in voltage that is detected at the counter, the pulse produced is proportional to the energy of the X-ray. A single channel analyzer (SCA) or pulse-height analyzer (PHA) (dependent on the particular machine) will collect the pulses and may also be set to exclude unwanted counting events. In quantitative analyses X-ray intensities are measured by counting the number of pulses in a specific time interval (the count time) and comparing with the intensity of X-rays from standards of known composition, creating a ratio. Concentrations are obtained through a series of calculations and expressed as percentages (Wittke, 2003; Reed, 2005).

2.4.2. Standardization

WDS analysis requires calibration of the EMP to standard(s) of known composition. This procedure includes peak searches to ensure the analyzing crystals are positioned properly for each element so refraction of the X-rays is correct. The basic process behind standardization relies on some knowledge of the composition of the unknown since calibration is required for each element that is analyzed. It is important to note that the ratio of X-ray counts for the unknown to known used to calculate quantitative data is not directly proportional to the concentration of the element in a sample. This is largely a function of the atomic makeup, or 'matrix', of the sample or standard. There are steps that can be taken to correct for these matrix effects (discussed in section 5) but in regards to standardization, potential matrix effects should be considered when choosing standards. Choosing a standard that is significantly different from the unknown can result in excessive matrix corrections. For light elements, the difference in chemical bonding of the sample and standard can cause a shift in peak position between the standard and the unknown. Thus, for example, when analyzing an oxide, oxides should be used for standardization (Wittke, 2003; Reed, 2005). Tables 2.3 and 2.4 list the standards employed in the analyses of glass and Fe-Ti oxides.

Since structure of glass is amorphous it is desirable to calibrate to a glass standard. In this study the glass standard UA 5831 is used. However, if the wt % of an element is too low, a peak search must be carried out on a mineral that has a higher wt % of that particular element before calibration on UA 5831. At even lower concentrations, approximately < 3 wt %, the calibration must be on the mineral with the higher wt % of the element being analyzed for. To determine the correct mineral for calibration (causing

Table 2.3: Electron microprobe analytical conditions for glass analysis. Beam diameter of 10 μm, beam current of 6 nA and accelerating voltage of 15 keV. Minerals chosen for standardization based on University of Toronto standardization protocol. Count time = count time in seconds, peak/background.

Element	Peak search	Crystal	Calibration	Count time	Order of analysis
Na_2O	tugtupite	TAP	UA 5831	20/10	1
SiO_2	UA 5831	TAPJ	UA 5831	20/10	1
K_2O	sanidine	PET	UA 5831	20/10	1
CaO	diopside	PET	diopside	20/10	1
FeOt	pyrope	LIFH	pyrope	20/10	1
MnO	willemite	LIFH	willemite	20/10	2
Cl	tugtupite	PETH	tugtupite	20/10	2
TiO_2	ilmenite	PET	ilmenite	20/10	2
Al_2O_3	UA 5831	TAPJ	UA 5831	20/10	2
MgO	pyrope	TAP	pyrope	20/10	2

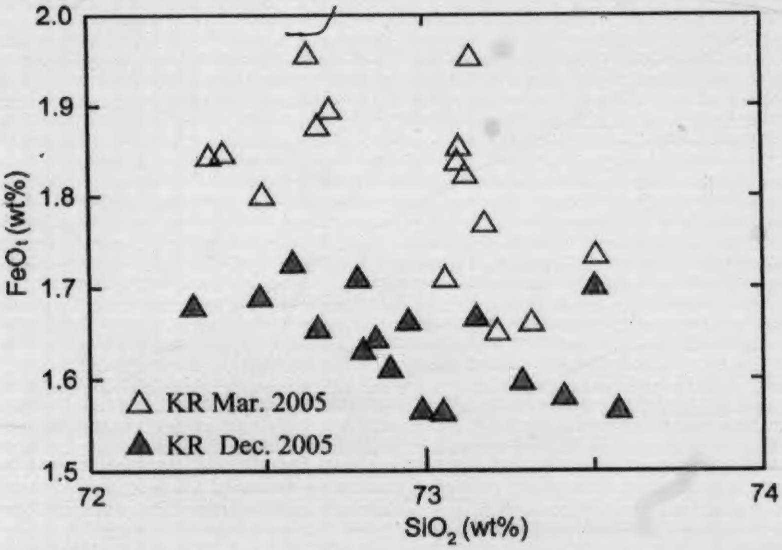
Table 2.4: Electron microprobe analytical conditions for Fe-Ti oxide analysis. Beam diameter of 1 μm, beam current of 20 nA, accelerating voltage of 20 keV. Counts time = count time in seconds, peak/background.

Element	Peak search/ Calibration	Crystal	Count time	Order of analysis
Ca	diopside	PET	20/10	1
Fe	magnetite/hematite	LIF	20/10	1
Si	diopside	TAPJ	20/10	1
Mn	willemite	LIFH	20/10	1
Ti	ilmenite	PET	20/10	1
Al	chromite	TAPJ	20/10	2
Cr	chromite	LIFH	20/10	2
Mg	chromite	TAPJ	20/10	2
Ni	Ni metal	LIFH	20/10	2
V	V metal	LIFH	20/10	2

the least matrix effects) can require trial and error. Standards used in this study were adapted from the University of Toronto tephrochronology lab (Preece pers.comm., 2004).

To ensure accuracy of analyses, it is important to analyze a secondary standard of known composition along with the unknowns. Since the composition of the standard is known it allows critical assessment of the analyses in terms of whether or not the standardization was successful and of the general performance of the EMP. Analysis of a secondary standard makes possible the correction of data that are skewed; whether it is an offset created by unsuccessful standardization or drift of the EMP that steadily increases or decreases the concentration of an element over the course of multiple analyses (Fig 2.6). However, if the errors are too large (e.g. greater than 1 wt%) corrections are not recommended because of complications regarding matrix corrections. Two secondary standards are used for the analysis of glass in this study: UA 5831, a non-hydrated rhyolitic obsidian, that is used by the Westgate lab and facilitates comparison to the University of Toronto database; and Old Crow tephra, a well-characterized secondarily hydrated tephra that is more similar to the majority of tephra beds. Smithsonian standard USNM 96189 (ilmenite) is used for the analysis of Fe-Ti oxides (Table 2.5).

At least four points are analyzed on UA 5831 to ensure standardization was successful. The analyses then begin with ~ six points analyzed on each secondary standard, which are subsequently analyzed after every 80 to 100 data points (e.g. one puck, equal to ~ 4 tephra samples with 20 to 25 points each). The last analyses will also be on the secondary standard, which then ensures that any shifts that have occurred over the course of the analyses can be identified and, ideally, corrected for.



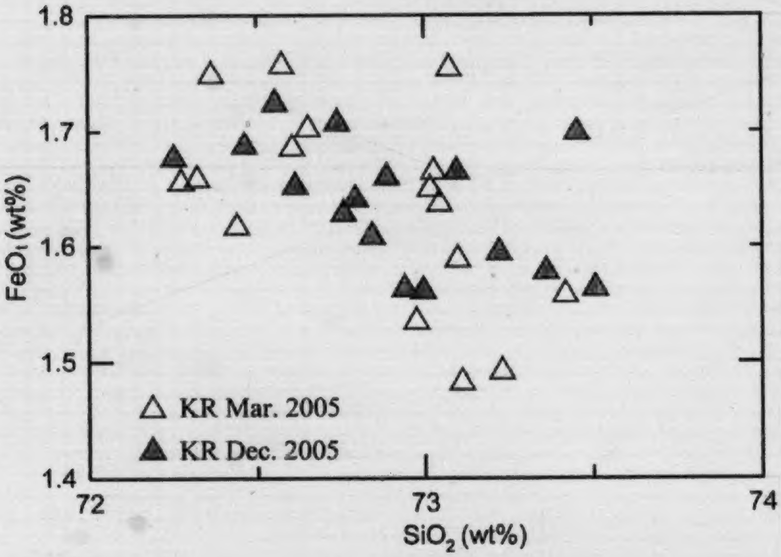


Figure 2.6: A comparison of analyses of Kandik River tephra (KR) from March 2005 and December 2005. The upper graph shows a difference in the FeO$_t$. The secondary standard data collected during the March analyses indicated there were slight problems with Fe standardization, causing an offset. Correction of the FeO$_t$ was possible and results are displayed in the lower graph.

Table 2.5: Secondary standard data, University of Toronto values compared to results from the University of Alberta

Oxides	UA 5831[a]		UA 5831[b]		UA 5831[c]		Old Crow[a]		Old Crow[c]		Old Crow[c]	
(wt%)							(normalized)		(normalized)		(not normalized)	
SiO_2	73.93	ND	74.08	(0.46)	73.86	(0.35)	75.42	(0.31)	75.41	(0.20)	72.05	(1.02)
TiO_2	0.10	ND	0.07	(0.02)	0.07	(0.03)	0.30	(0.07)	0.29	(0.04)	0.28	(0.04)
Al_2O_3	13.12	ND	13.08	(0.12)	13.12	(0.13)	13.08	(0.19)	13.14	(0.14)	12.56	(0.22)
FeO_t	1.61	ND	1.57	(0.04)	1.55	(0.05)	1.72	(0.08)	1.70	(0.05)	1.63	(0.05)
MnO	0.07	ND	0.07	(0.02)	0.06	(0.03)	0.07	(0.04)	0.06	(0.03)	0.06	(0.03)
MgO	0.07	ND	0.04	(0.00)	0.05	(0.02)	0.28	(0.03)	0.28	(0.02)	0.27	(0.02)
CaO	0.76	ND	0.74	(0.02)	0.74	(0.03)	1.50	(0.07)	1.46	(0.04)	1.40	(0.05)
Na_2O	4.06	ND	3.97	(0.12)	4.11	(0.12)	3.73	(0.24)	3.78	(0.13)	3.61	(0.16)
K_2O	5.04	ND	5.04	(0.02)	5.03	(0.10)	3.70	(0.13)	3.66	(0.09)	3.49	(0.09)
Cl	0.36	ND	0.26	(0.09)	0.34	(0.02)	0.28	(0.04)	0.27	(0.03)	0.26	(0.03)
Total	99.12	ND	98.91	(0.53)	98.85	(0.41)	100	NA	100	NA	95.54	(1.37)
H_20diff	NA	NA	NA	NA	NA	NA	4.93	(1.51)	4.46	(1.52)	NA	NA
n	ND		93		61		ND		54		54	

a- Accepted University of Toronto values (Westgate pers.comm., 2004)

b- Data from Carter et al. (2004)

c- University of Alberta values, Old Crow analyses limited to UT 1434, values based on December 12 2005 and March 27/28 2006 data, no corrections were required

ND = no data available; NA = not applicable

2.4.3. Conditions for analysis

Once the EMP has been standardized and the points to be analyzed have been chosen, several parameters that must be defined before the analyses commence: beam size, beam current, voltage, analysis order and counting times. Conditions for analysis of Fe-Ti oxides are listed in Table 2.4. These conditions are comparable to most geologic analyses run on an EMP since Fe-Ti oxides are stable under bombardment of the electron beam.

Glass, particularly hydrous glass rich in alkali metals such as Na and K, is unstable under the electron beam. Analyses using common probe conditions for geologic studies will cause Na and, occasionally, K loss. The migration will lower the Na and K count rate, which, in turn, will cause changes in other elements. These effects are most prominent in the two most abundant elements Si and Al (Fig. 2.7; Varshneya et al., 1966; Vassamillet and Caldwell, 1969; Nielson and Sigurdsson, 1981; Morgan and London, 1996; Hunt and Hill, 2001). Various attempts have been made to prevent migration from occurring, for example, cryogenics and empirical correction methods (Nielsen and Sigurdsson, 1981), but success has largely been achieved by trial and error in adjusting probe parameters of beam diameter, beam current, voltage, analysis order and counting times (Hunt and Hill, 1996, 2001; Preece pers. comm., 2004). Avoiding Na loss requires analyzing for alkali elements first, lowering counting times (~30 s total/ element), using a defocused beam diameter of at least 10μm, a lower voltage (~15KeV) and beam current (~6nA) (Table 2.3).

Data quality is also dependent on quality of the points chosen for analysis. The presence of phenocrysts and smaller contaminants (Table 2.6) and the size of the beam

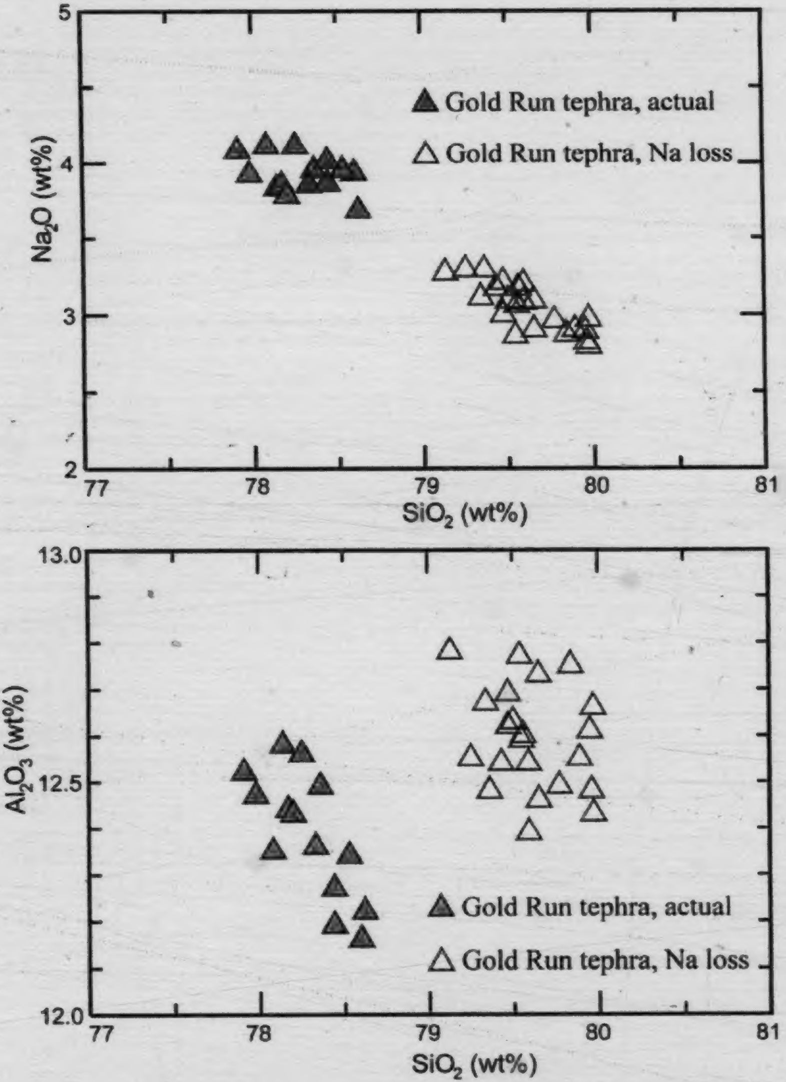


Figure 2.7: A comparison of Gold Run tephra glass data. Na loss can be difficult or occasionally impossible to correct due to additional effects on the counting of other elements. The most common outcome of these effects is a substantial increase in Si and, to a lesser extent, Al.

Table 2.6: Terminology for contaminants found in glass shards (from Hunt and Hill 2001).

Terminology	Crystal Size
Phenocryst	>0.5 mm-1.0 mm
Microphenocryst	10 μm- 500 μm
Microlite	< 10 μm, exhibits polarsation colours
Crystallite	<< 10 μm, does not display polarisation colours

should be kept in mind when choosing points. Most contaminants within the glass can be avoided by using backscattered electron images and glass morphology as guides.

Automated stages on an EMP can have an error of 2 to 5 μm when returning to a pre-set point (Mateev pers. comm., 2005). This should be kept in mind when picking points to avoid edge effects, or missing a point entirely. To ensure that quality data points are achieved, each tephra sample should have at least 20 to 25 individual points.

Using lower voltages, currents and counting times can affect the detection limits (expressed in ppm) and precision (expressed as the standard deviation) of the results. This is problematic when trying to measure elements with a concentration of < 1 wt%, often the case for Ti, Mn, Mg and Cl in tephra beds analyzed in this study. It is possible to increase the precision of the results for these elements by altering the peak and background counts and increasing the count time overall. However, the potential for sodium migration forces shorter counting times and prevents significant improvements (Reed, 2005). To solve this problem each tephra should have a significant number (~10-20 points) of data points. Although a single analysis may have a standard deviation that renders the individual analysis insignificant, average values from multiple analyses of the same sample will have a standard deviation that represents the much improved combined precision (Table 2.7).

Table 2.7: Output information from the electron microprobe for a single analysis on Old Crow. S.D = standard deviation, indicates the precision of the analysis. D.L.= detection limit. When the concentration of an element gets close to the detection limit the precision drops precipitously. The elements with high S.D (Cl, Cl, Ti, Mn, Mg) do not provide reliable results for a single analysis, thus a number of analyses are required to provide a value that is acceptable. Bg-, Bg+ = Background counts from either side of the peak. Wt.% = the final results after matrix corrections.

```
UNK No.      :     9              Comment : Old Crow-1
 Stage        :     X=   14.9215  Y=   28.7165  Z=   11.1535
 Acc. Voltage :     15.0 (kV)     Probe Dia. : 10     Scan : Off
 Dated on May 31 18:09 2006
 WDS only         No. of accumulation : 1

Curr.(A) : 5.921E-09
Element  Peak(mm)     Net(cps)   Bg-(cps)  Bg+(cps)    S.D.(%)    D.L.(ppm)
 1 K     120.646        128.8       3.8        3.0       2.02        170
 2 Na    129.755         68.4       0.0        2.4       2.75        230
 3 Cl    151.210          7.2       1.6        1.8      10.11        143
 4 Si     77.665       3599.6       0.0       10.6       0.37        205
 5 Fe    134.525         49.8       7.4        8.6       3.67        276
 6 Ti     88.791          5.5       7.4        6.3      17.68        273
 7 Mg    107.899         12.2       0.0        2.1       6.93        120
 8 Ca    107.053         72.6       6.0        6.2       2.84        151
 9 Al     90.758        677.5       0.0        6.6       0.86        151
10 Mn    146.180          0.9       0.0        5.7      63.83 ?      205

ZAF Oxide
Element   Wt.(%)    Cation    K(%)   K-raw(%)   ZAF      Z        A        F
 K2O       3.748    0.3292   3.747   74.339  1.0003  1.0008  1.0003  0.9992
 Na2O      3.216    0.4293   3.214   79.163  1.0005  1.0007  0.9999  0.9999
 Cl        0.258    0.0300   0.250    3.303  1.0296  1.0075  1.0242  0.9979
     = O  -0.058
 SiO2     71.510    4.9230  71.587   96.830  0.9989  1.0007  0.9981  1.0001
 FeO       1.541    0.0887   1.524   14.254  1.0114  1.0105  1.0009  1.0000
 TiO2      0.210    0.0109   0.183    0.401  1.1441  1.0892  1.0205  1.0293
 MgO       0.309    0.0317   0.319    1.721  0.9702  1.0090  0.9645  0.9969
 CaO       1.433    0.1057   1.399    5.434  1.0245  1.0017  1.0231  0.9996
 Al2O3    12.531    1.0169  12.564   95.760  0.9974  1.0007  0.9970  0.9997
 MnO       0.028    0.0016   0.024    0.506  1.1366  1.0913  0.9979  1.0436
 -----------------------------------------------------------------------
 Total     94.726   6.9669  94.810 371.712  Total O =  12.0 Iteration= 3
```

2.5. Data Analysis

Potential problems associated with the analysis of glass, secondary hydration of glass in tephra beds and matrix effects requires that the data undergo a series of corrections. The initial corrections are complex mathematical methods applied during data collection and to the raw data following analysis. After the data have been retrieved from the EMP, simple calculations are used to normalize the data and, if required, correct for problems with standardization or drift.

2.5.1. Matrix corrections

Various software routines are available to account for the effects of the sample's matrix. Matrix corrections are 'off-line' correction methods that can be applied to the data after they have been obtained by the EMP. Two of the most common types are 'ZAF' (atomic number-absorption-fluorescence) and 'ϕρz' (Hunt and Hill, 1996; Reed, 2005).

ZAF is the oldest and most common method of matrix corrections, and is considered the most basic. ϕρz is a more complex method that deals in a more realistic manner with secondary absorption, one of the more problematic of the matrix effects, and is considered to be a superior method. It is important to apply the same matrix correction method and to ensure that all external data used for comparison are also corrected with the same method. The different approaches of ZAF and ϕρz can cause considerable differences in the final results (Fig. 2.8). ZAF is the correction method used in this study to facilitate comparison with previous work from other labs.

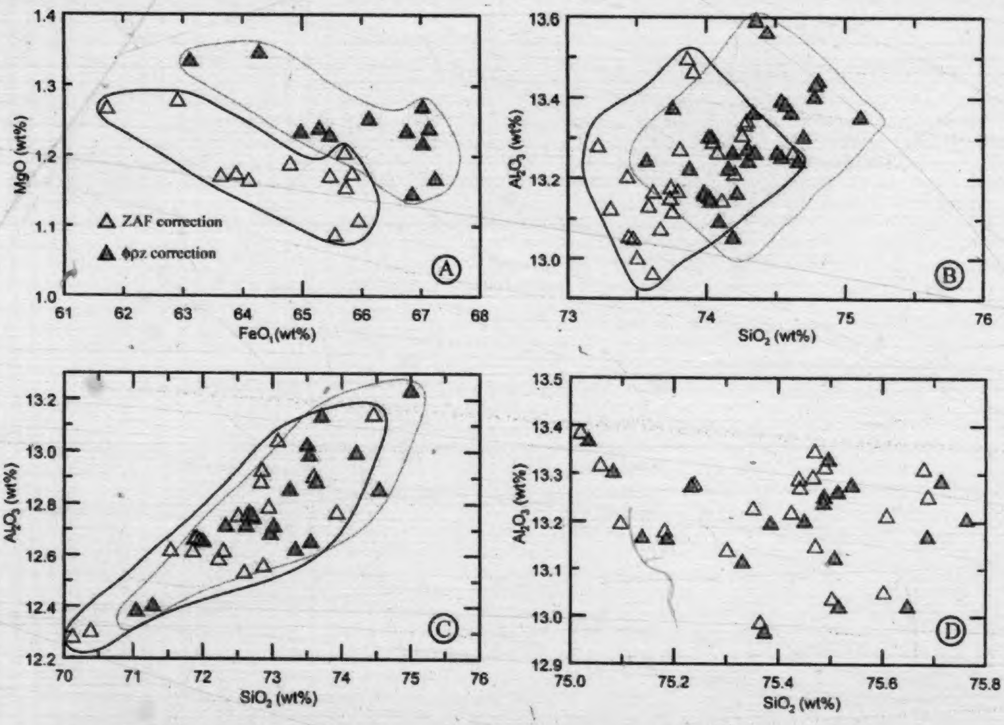


Figure 2.8: Examples of glass and Fe-Ti oxide data corrected by two different methods, ZAF and ϕρz. (A)- Biederman Tephra ferrian ilmenite data; (B)- UA 5831; (C)- Old Crow glass data, un-normalized data; (D)- Old Crow glass data, normalized. These graphs indicate that the offset is particularly significant with oxides, but also exists in glass data, although not to the same degree. Interestingly enough, normalizing the glass data decreases the amount of offset. Regardless, not using the same method can hinder correlations.

5.2. Correcting for offset and drift

After analyses are complete, secondary standard data are compared to the accepted values to assess the quality of analyses. Two potential corrections may have to be applied:

1) Offset is used when, for example, Fe is consistently low or high throughout the secondary standard analyses when compared to the accepted Fe value ($Fe_{accepted}$). $Fe_{accepted}$ is divided by the average Fe value ($Fe_{average}$) for all secondary standard analyses

($Fe_{accepted}/Fe_{average}$). This ratio is the correction factor and is multiplied to each Fe result in the analysis (Fig. 2.6). Corrections should only be applied if offset is minor (~ < 1 wt%)

2) Drift is used when, for example, Si steadily increases or decreases through a set of analyses minor drift (~ < 1 wt%) may be corrected for. However, the drift increase or decrease must be linear, otherwise the analyses must be redone. Each group of secondary standard analyses is averaged. The first averaged secondary standard Si value is assigned time 1 (t_1), while each subsequent analysis on the unknown tephra beds is t_2, t_3, $t_4 \ldots t_n$. The results are graphed with time on the x-axis and the averaged secondary standard Si values on the y-axis, and fit with a linear regression, with the slope of the line the correction factor (cf) (Fig. 2.9). Thus, to correct Si for the nth analysis (Si_{corr}) the following equation would be used: $Si_{corr} = Si_{tn} \pm cf \times t_n$. This equation straightens the line of the graph so it is horizontal from the Y-intercept. If the Y-intercept of the equation is within error of the accepted secondary standard Si value, the corrections are complete. If the Y-intercept is offset an additional offset correction may need to be applied to the data: $Si_{final} = (Si_{accepted}/Si_{intercept})$ x each drift corrected Si value.

2.5.3. Normalization

After the data have been corrected the final step is normalization wherein the data are normalized to 100% on a water-free basis. The assumption involved in this step is the difference between 100% and analytical total (often ~95-98%) is due to secondary hydration. This is generally a safe assumption in that other potential elements present, such as Ba, P and F, would have very low concentrations, potentially below the detection limit of the EMP. The main reason to normalize the data is due to differential secondary

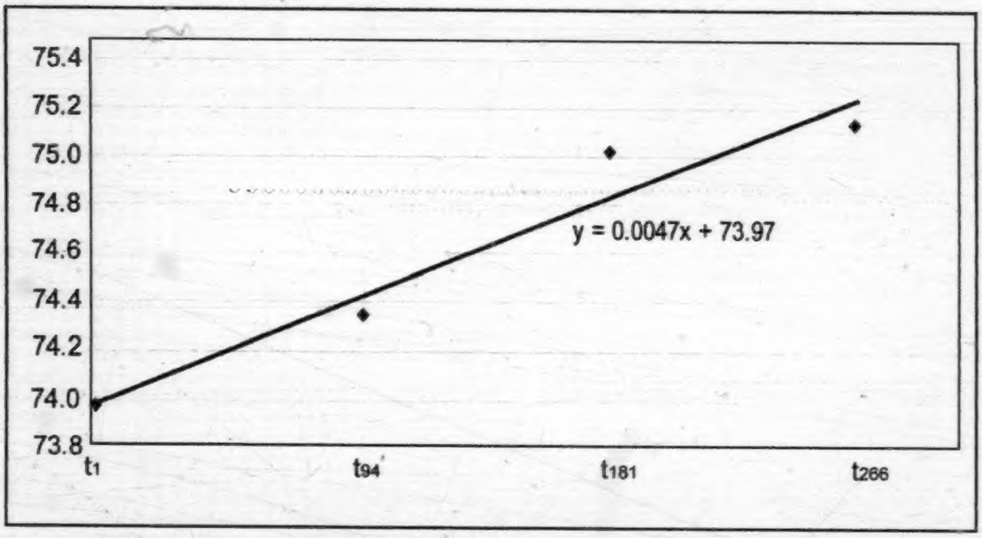


Figure 2.9: An example of drift correction for a linear increase in Si during a problem run. Each diamond represents an average Si value for the secondary standard analyses carried out at specific points throughout the run. The equation for correcting the Si in this run would be: $Si_{corr} = Si_{tn} - 0.0047t_n$. The intercept of the line is at 73.97 Si wt%, well within error of the accepted UA5831 value of 73.93 wt%. Therefore no further correction was required for this data set.

hydration, common in Chester Bluff tephra beds, which are generally of mid-Pleistocene age. Secondary hydration, defined as post-depositional absorption of water by glass over time, will lower the percentage of each element and the overall total for a tephra bed, but the elements themselves are not mobile and remain within the glass shards. The variation in hydration, and thus the totals and element percentages, can result in significant spread in the data. By normalizing the data to exclude water, data dispersion is constrained (Fig. 2.10). With less dispersion in the data points a more defined data set is produced which can aid correlations, especially amongst similar tephra beds.

2.5.4. *Identifying contaminants*

The final step before correlations can be attempted is identifying and removing contaminated points. When phenocrysts are accidentally analyzed it is often obvious with

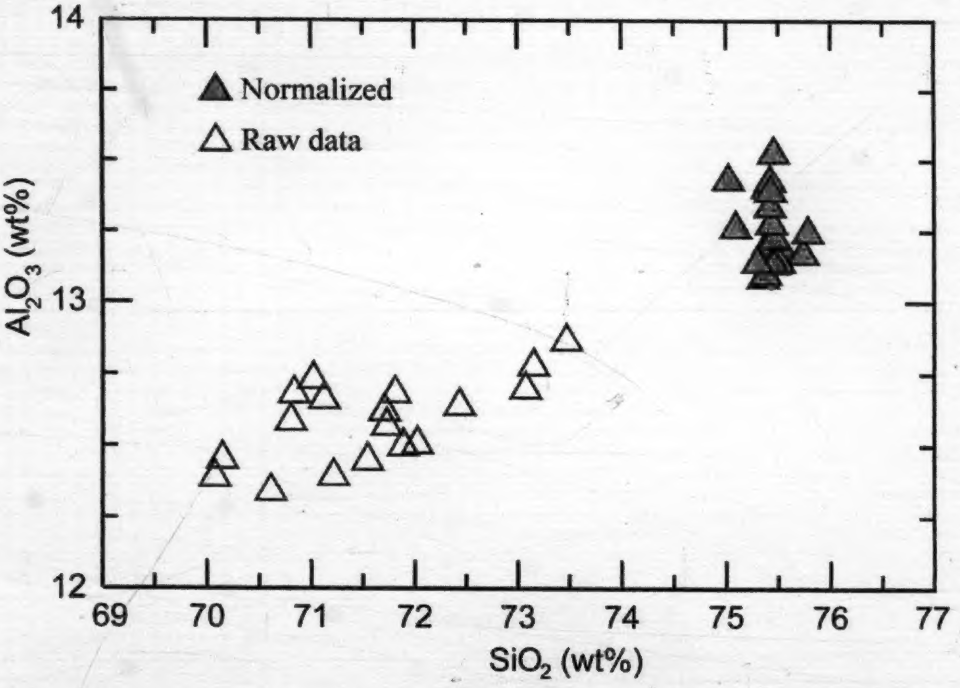


Figure 2.10: A comparison of normalized and original Old Crow tephra data. Differential secondary hydration of the tephra bed leads to a spread of the original data of ~ 2.7 wt% for Al and ~ 4 wt% for Si. Once the data have been normalized to 100% on a water free basis both ranges decrease to < ~2.0 wt%.

outliers falling away from other points or trends. More difficult to identify are mixed points that can occur when microcrysts or smaller crystals are analyzed with glass. To successfully identify this mixed data it is important to know the mineral content of the tephra bed and the general geochemical trend that would be expected from a tephra bed from a particular source, in this case the Wrangell Volcanic Field and the Aleutian Arc-Alaskan Peninsula volcanoes (Fig 2.11.).

2.6. Correlations

Tephra correlation occurs after corrections and normalization are complete and

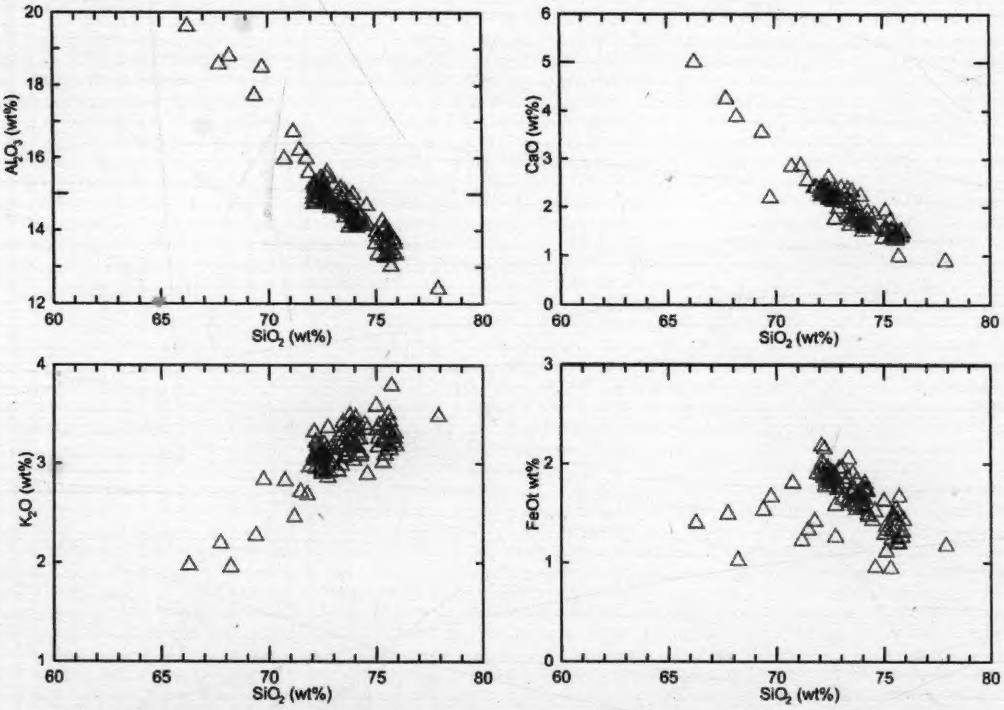


Figure 2.11: Picking out contaminant points can be subjective and difficult. However, some trends can be telling. For example, CaO, Al_2O_3 and K_2O show trends that are expected in glass data from the White River Ash, northern lobe. However, the drop in FeO_t seen in the lowest SiO_2 values is unexpected, FeO_t should continue to increase with decreasing SiO_2. This suggests that the lower SiO_2 points are contaminated, likely by plagioclase, which has insignificant Fe and is consistent with the increase in CaO and Al_2O_3 and decrease in K_2O.

contaminated points have been discarded. If multiple populations are present within a tephra bed they should be grouped separately. Averages and standard deviations are calculated for each tephra bed and each individual population. These values are used as a guide to identify potential correlatives, a process that may be done visually or in a database. Once potential correlations have been identified they are graphed in bivariate plots for confirmation.

The final step in developing robust correlations is re-probing the unknown tephra bed with a reference sample of the potential correlative tephra bed, thereby ensuring both samples are analyzed under the same instrumental conditions. This is necessary in consideration of the minor variation that occurs between many tephra beds. Even after correcting data to a single secondary standard there may be subtle differences between runs. It is necessary that potential correlative beds are analyzed with the unknown and under the same EMP conditions to eliminate these potential differences.

2.7. Conclusions

The use of tephra beds to correlate and date sediments is hampered by the unstable nature of glass and, particularly for this study, the presence of multiple tephra beds from similar sources that occur over long time spans. These problems are not insurmountable if a careful methodology is followed. It is important to detail the methods used in a study if robust tephrostratigraphy is to be established. In particular:

1. A multiple criteria approach should be followed wherein geochemical data supports stratigraphic, chronologic, paleomagnetic, paleoecological and petrologic evidence.
2. Standardization and instrumental conditions are confirmed by reproducible results with secondary standard(s).
3. Secondary standard(s) compositional values are stated.
4. Off-line correction method (e.g. ZAF vs. $\phi\rho z$) is stated.
5. Data are normalized, particularly for older tephra beds with secondary hydration.
6. Unknown tephra beds and suspected correlative tephra beds are probed under the same instrumental conditions in a single probe run.

2.8. References

Borchardt, G.A., Aruscavage, P.J., Millard Jr., H.T., 1972. Correlation of the Bishop Ash, a Pleistocene marker bed, using instrumental neutron activation analysis. Journal of Sedimentary Petrology 42, 301-306.

Carter, C., Alloway, B., Shane, P., Westgate, J., 2004. Deep ocean record of major late Cenozoic rhyolitic eruptions from New Zealand. New Zealand Journal of Geology and Geophysics 47, 481-500.

Hunt, J.B., Hill, P.G., 1996. An inter-laboratory comparison of the electron probe microanalysis of glass geochemistry. Quaternary International 34-36, 229-241.

Hunt, J.B., Hill, P.G., 2001. Tephrological implications of beam size- sample-size effects in electron microprobe analysis of glass shards. Journal of Quaternary Science 16, 105-117.

Lerbekmo, J.F., Campbell, F.A., 1969. Distribution, composition, and source of the White River Ash, Yukon Territory. Canadian Journal of Earth Sciences 6, 109-116.

Lerbekmo, J.F., Westgate, J.A., Smith, D.G.W., Denton, G.H., 1975. New data on the character and history of the White River volcanic eruption, Alaska. In: Suggate, R.P., Cresswell M.M. (Eds), Quaternary studies. Royal Society of New Zealand, Wellington, pp. 203-209.

Morgan, G.B., London, D., 1996. Optimizing the electron microprobe analysis of hydrous alkali aluminosilicate glasses. American Mineralogist 81, 1176-1185.

Murr, L.E., 1982. Electron and Ion Microscopy and Microanalysis; Principles and Applications. Marcel Dekker, Inc., New York.

Nielsen, C.H., Sigurdsson, H., 1981. Quantitative methods for electron microprobe analysis of sodium in natural and synthetic glasses. American Mineralogist 66, 547-552.

Preece, S.J., Westgate, J.A., Gorton, M.P., 1992. Compositional variation and provenance of late Cenozoic distal tephra beds, Fairbanks area, Alaska. Quaternary International 13/14, 97-101.

Reed, S.J.B., 2005. Electron microprobe analysis and scanning electron microscopy in geology. Cambridge University Press.

Rosenblum, S., Brownfield, I.K., 1999. Magnetic susceptibilities of minerals. United States Geological Survey Open-File Report 99-529.

Sarna-Wojcicki, A.M., Bowman, H.W., Russell, P.C., 1979. Chemical correlation of some late Cenozoic tuffs of northern and central California by Neutron Activation Analysis of glass and comparison with X-Ray Fluorescence Analysis. United States Geological Survey Professional Paper, 1147.

Sarna-Wojcicki, A.M., Davis, J.O., 1991. Quaternary tephrochronology. In: Morrison, R. (Eds), The geology of North America, vol. K-2, Quaternary nonglacial geology: conterminous U.S. Geological Society of America, Boulder, pp. 93-116.

Smith, D.G., Westgate, J.A., 1969. Electron probe technique for characterizing pyroclastic deposits. Earth and Planetary Sciences Letters 5, 313-319.

Varshneya, A.K., Cooper, A.R., Cable, M., 1966. Changes in composition during electron microprobe analysis of K_2O-SrO-SiO_2 glass. Journal of Applies Physics 37, 2199.

Vassamillet, L.F., Caldwell, V.E., 1969. Electron-probe microanalysis of alkali metals in glasses. Journal of Applied Physics 40, 1637-1640.

Westgate, J. A., Gorton, M. P. 1981. Correlation techniques in tephra studies. In: Self, S., Sparks, R.S.J. (Eds). Tephra studies: proceedings of the NATO Advanced Study Institute, tephra studies as a tool in Quaternary research. D. Reidel Publishing Company, Dordrecht, pp. 73-94.

Westgate, J.A., Naeser, N.D., 1995. Tephrochronology and Fission-Track Dating. In: Rutter, N.W., Catto, N.R. (Eds). Dating Methods for Quaternary Deposits. Geological Association of Canada, St. John's, pp. 15-28.

Wittke, J.H., 2003. Northern Arizona University electron microprobe laboratory website. http://www4.nau.edu/microanalysis/Microprobe/Probe.html.

CHAPTER 3- CASE STUDY: GEOCHEMICAL CHARACTERIZATION OF THE WHITE RIVER ASH

Content of this chapter will be submitted for publication to the Canadian Journal of Earth Sciences:

Characterization, distribution, magnitude and age of the late Holocene White River eruptions

D.G. Froese, B.J.L. Jensen, N.J.G. Pearce, J.J. Clague, J.M. Livingston

3.1. Introduction

The White River Ash includes two eruptions referred to as White River north, or northern lobe, and White River east, or eastern lobe. These beds are the product of two Plinian eruptions of Mt. Churchill in the Wrangell Volcanic field (WVF) (Fig. 3.1; Lerbekmo et al., 1975; McGimsey et al., 1992; Richter et al., 1995). Both tephra beds are important stratigraphic markers for Holocene studies in Yukon and parts of Alaska and N.W.T (e.g. Rampton, 1970; Robinson, 2001; Clague et al., 2006), and figure prominently in hypotheses regarding the migration of the Athapaskan people (Workman, 1977, 1979; Moodie et al., 1992; Ives, 2003). The northern lobe is the earlier eruption and has been dated by surrounding organic material to ~1700 ^{14}C yr B.P. (ca. 300 AD), while the eastern lobe dates to ~1250 ^{14}C yr B.P. (ca. 800 AD) (Clague et al., 1995, Froese, unpublished data). Volume estimates are not well established for either lobe, but in consideration of new locations presented in this paper, Robinson's (2001) volume estimate of 27 km^3 for the eastern lobe can be regarded as a minimum. Volume estimates for the northern lobe are less reliable because there are considerably fewer data points, although what is known of its distribution suggests it was a significantly smaller eruption of ca. 10-20 km^3 (Downes, 1985; Froese, unpublished data)

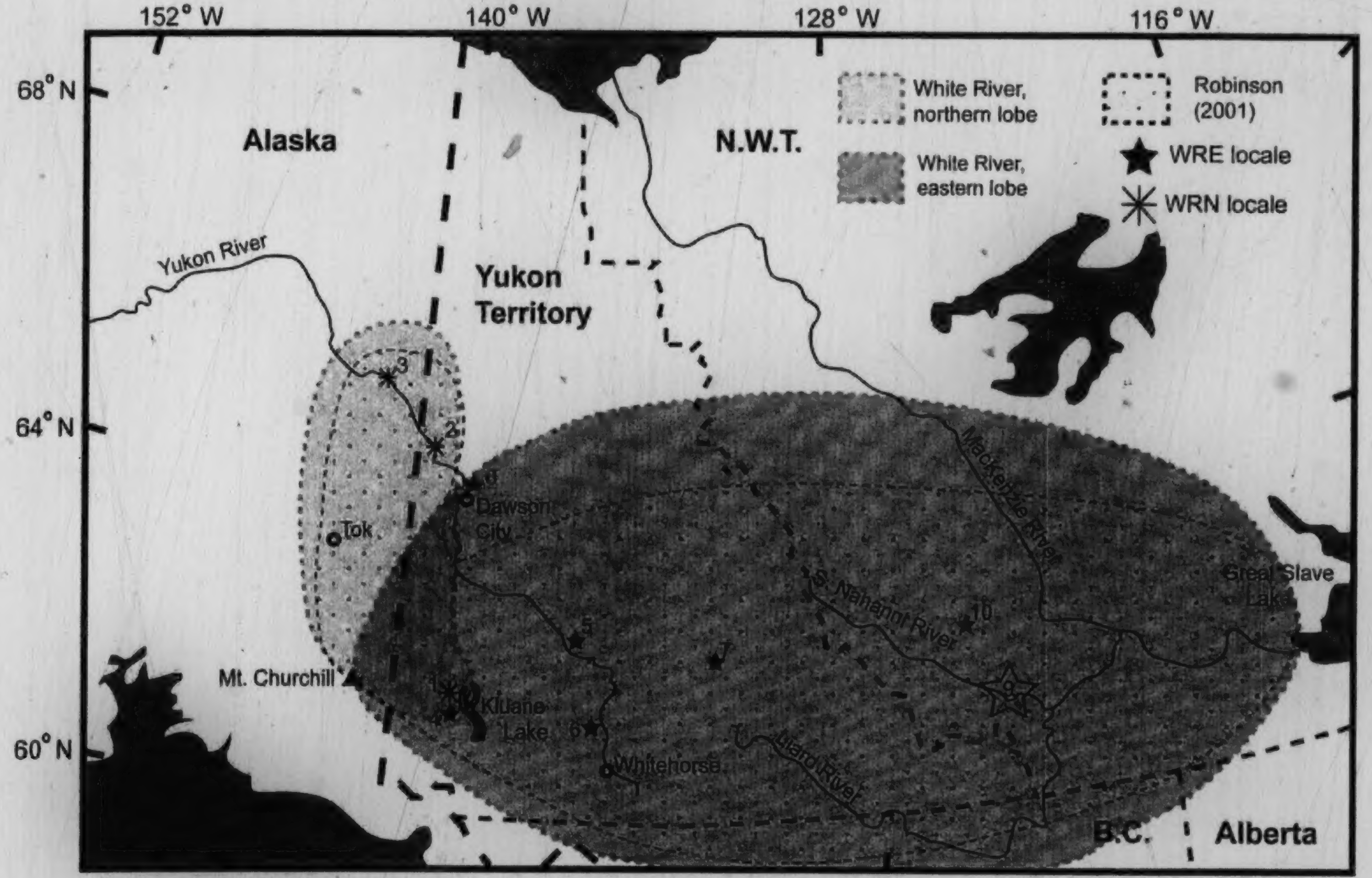

152° W
140° W
128° W
116° W
68° N
64° N
60° N
Alaska
Yukon Territory
N.W.T.
B.C.
Alberta
Yukon River
Mackenzie River
S. Nahanni River
Liard River
Great Slave Lake
Tok
Dawson City
Mt. Churchill
Kluane Lake
Whitehorse
White River, northern lobe
White River, eastern lobe
Robinson (2001)
WRE locale
WRN locale
1
2
3
5
6
7
8
9
10

Figure 3.1: Location map of sampling sites for White River northern (WRN) and eastern lobes (WRE). The site numbers correspond to site information provided in Table 3.2. New plume extent modified from Lerbekmo et al. (1975) and Robinson (2001).

The unique character of tephra beds, including their geochemistry, mineral assemblages, glass morphology and stratigraphic setting provides the foundation for tephrochronology (Westgate and Gorton, 1981). The current standard for characterizing tephra beds is by electron microprobe analysis (EMPA) of single glass shards. This analysis may include major elements such as Si, Al, Fe, Ca, Na and K, and minor elements relatively abundant in glass (>100 ppm) such as Ti, Mn, Mg, Cl, P, Ba and F (Smith and Westgate, 1969; Sarna-Wojcicki and Davis, 1991). Despite being among the most widely recognised tephra beds in North America, there are limited published data on glass chemistry of the northern and eastern lobes of the White River ash. Lerbekmo and Campbell (1969) analyzed what was then recognised as a single bi-lobate eruption with X-Ray Fluorescence (XRF), a bulk chemistry method. XRF is not often accurate enough to distinguish or correlate tephra beds because samples will invariably include contaminants and geochemical trends are averaged. Downes (1985) published a limited data set of glass shard analyses, and conclude that the two eruptions are not distinguishable by major element glass geochemistry.

Although major element glass data are limited for the White River Ash, the Fe-Ti oxides are well characterized. Lerbekmo et al. (1975) first characterized the Fe-Ti oxides for each lobe, distinguishing the eruptions with Fe-Ti oxide data and radiocarbon dates, as well as determining eruption temperature ranges. Downes (1985) reported whole rock analyses and Fe-Ti oxide data and used these to determine eruption temperatures. Richter et al. (1995) reproduced the eastern lobe Fe-Ti oxide data, and established Mt. Churchill as the source vent with additional whole rock and glass analyses on pumice.

The White River Ash beds provide a valuable case study for determining the efficacy of glass analyses, particularly for tephra beds from the same source, and the potential benefit of analyzing other constituents in tephra beds, namely Fe-Ti oxides. They also provide an example of how stratigraphy can be used to help distinguish tephra beds when geochemical data alone are insufficient.

The purpose of this chapter is twofold. First, there is a general conclusion that major element glass geochemistry cannot be used to distinguish the northern and eastern lobes of the White River Ash. However, this is a largely untested assumption given the few analyses that are published. In this chapter I present the analyses of multiple samples of the northern and eastern lobes of the White River Ash. This set of data is used to test the assumption that the lobes are indistinguishable by glass geochemistry. Secondly, the Lerbekmo et al. (1975) Fe-Ti oxide data is used as a guide to test our ability to reproduce Fe-Ti oxide data and, therefore, provide confidence to future data from unidentified beds.

3.2. Methods

Multiple samples of the White River eastern and northern lobes were collected over several years and a broad geographical area (Table 3.1). All samples were analyzed at the University of Alberta Electron Microprobe laboratory. Samples were initially wet sieved into multiple size fractions, and inspected to select those most suitable for glass analyses. Glass shards were isolated by heavy liquid floatation and, if necessary, the glass separates were treated with 30% hydrogen peroxide to oxidize organic matter. A hand magnet was used to separate the magnetite and a Frantz separator removed the Fe-Ti oxides, using the 'best range' for ilmenite from Rosenblum and Brownfield (1999).

Table 3.1: White River Ash sample locations

Accession #	Lobe	Locale	# on Fig. 1	Collector	Pts. analysed
UA 1044	northern	Duke River fan, north end of Kluane Lake on the Kluane River, SW Yukon Territory; 61°26' N, 139°5' W	1	Britta Jensen	36
UA 1046	northern	Confluence of 40 Mile and Yukon Rivers, west-central Yukon Territory; 61°34' N, 124°6' W	2	Duane Froese	31
UT 1761	northern	"80 m Bluff" in Yukon Charley Rivers National Preserve, Alaska; 64°51' N, 141°08' W	3	Duane Froese	34
UA 1042	eastern	Duke River fan, north end of Kluane Lake on the Kluane River, SW Yukon Territory; 61°25' N, 139°4' W	4	Britta Jensen	19
UA 1043	eastern	Duke River fan, north end of Kluane Lake on the Kluane River, SW Yukon Territory; 61°25' N, 139°4' W	4	Britta Jensen	40
UA 1045	eastern	Duke River fan, north end of Kluane Lake on the Kluane River, SW Yukon Territory; 61°26' N, 139°5' W	4	Britta Jensen	40
UA 1119	eastern	North Klondike Highway ~20 km north of Carmacks, south-central Yukon Territory	5	Britta Jensen	29
UA 1120	eastern	Fox Lake, north of Whitehorse, south-central Yukon Territory	6	R.Marcantonio/M.Pisaric	25
UA 1121	eastern	Fox Lake, north of Whitehorse, south-central Yukon Territory	6	R.Marcantonio/M.Pisaric	24
UT 2006	eastern	~5 km north of Ross River on the North Canol Road, east-central Yukon Territory; 62°01' N, 132°22' W	7	Duane Froese, Britta Jensen	17
UA 1247	eastern	Moosehide, Yukon Territory; 64°07' N, 139°28' W	8	Duane Froese	2
UA 1248	eastern	MacKenzie Mountain locale, N.W.T.; 61°34' N, 124°6' W	9	Paul Sanborn	16
UA 1249	eastern	South of Death Lake, N.W.T.; 61°28' N, 124°6' W	9	Paul Sanborn	18
UA 1251	eastern	MacKenzie Mountain locale, N.W.T.; 61°36' N, 124°4' W	9	Paul Sanborn	18
UA 1252	eastern	MacKenzie Mountain locale, N.W.T.; 61°36' N, 124°4' W	9	Paul Sanborn	16
UA 1253	eastern	North Nahanni River, N.W.T.; 62°26' N, 125°46' W	10	Paul Sanborn	10
UA 1254	eastern	South of Raven Lake, N.W.T.; 61°34' N, 124°6' W	9	Paul Sanborn	15

Samples were mounted in epoxy for EMPA.

All analyses were conducted on a JEOL superprobe. For glass analyses the probe was operated at 15 keV accelerating voltage, with a 10 μm beam diameter and 6nA beam current. Secondary standardization was to obsidian standard UA 5831, and the data were recast to 100% on a water-free basis. For analyses of Fe-Ti oxides the probe was operated at 20 keV, with a 1μm beam diameter and 20 nA beam current, secondary standardization on USNM 96189. ZAF was the correction method used.

3.3. Results and Discussion

3.3.1. Petrology and Glass Morphology

Yukon and Alaska tephra beds are broadly categorised into Type I, sourced from the Aleutian Arc-Alaskan Peninsula, and Type II, sourced from the Wrangell Volcanic Field and/or Hayes Volcano (Preece et al. 1992, 1999, 2000). Therefore, the White River tephra beds are Type II beds. Their petrology is typical of this classification, dominated by inflated frothy pumice with 5-20% phenocrysts consisting of hornblende, plagioclase, magnetite, Fe-Ti oxides and trace biotite (Preece et al. 1992, Richter et al. 1995). There are few mineralogical differences between the eastern and northern lobes. Both are dominated by hornblende and plagioclase phenocrysts, although the northern lobe has a noticeable population of hypersthene. The eastern lobe plagioclase phenocrysts commonly display oscillatory zoning with rare albite and Carlsbad twinning. The northern lobe plagioclase rarely displays oscillatory zoning.

Glass morphology of the eastern lobe is dominated by inflated frothy pumice with phenocrysts commonly embedded within glass shards. The northern lobe also consists of inflated frothy pumice, however the glass walls are noticeably thicker than found in the eastern lobe glass (Fig. 3.2). Northern lobe glass shards also contain abundant microphenocrysts and microlites that are difficult to avoid during EMPA.

3.3.2. Glass and Fe-Ti oxide Geochemistry

Downes (1985) concluded that glass chemistry is not diagnostic for distinguishing the eastern and northern lobes (Table 3.2). The results of this study are generally in agreement with the conclusion that it is not the preferable method to identify the tephra beds. However, there are subtle, but identifiable, differences in glass chemistry between the eastern and northern lobes.

Table 3.2: Downes (1985) data set, normalised to 100% on a water free basis.

	SiO_2	TiO_2	Al_2O_3	FeO_t	MnO	MgO	CaO	Na_2O	K_2O	$H_2$0d
North	79.34	0.17	12.66	1.13	0.04	0.18	1.12	2.27	3.08	-0.53
North	76.93	0.21	14.21	1.24	0.04	0.27	1.38	2.57	3.15	-1.38
North	77.23	0.16	13.45	1.26	0.00	0.17	1.38	2.84	3.51	1.95
North	75.16	0.23	14.69	1.68	0.04	0.38	2.15	2.76	2.92	2.27
North	74.24	0.32	14.49	1.66	0.04	0.44	2.00	3.72	3.08	1.20
North	75.69	0.30	14.75	1.60	0.05	0.21	1.93	2.35	3.12	2.68
North	75.94	0.18	14.32	1.44	0.04	0.20	1.60	3.01	3.26	0.74
East	75.51	0.29	14.42	1.63	0.07	0.39	1.86	2.85	2.99	2.30
East	74.87	0.25	14.33	1.66	0.05	0.48	1.87	3.24	3.26	1.72
East	75.63	0.24	14.12	1.55	0.00	0.34	1.89	3.10	3.13	0.36
East	75.54	0.22	14.22	1.74	0.05	0.38	1.89	2.83	3.13	-0.67

Downes (1985) reported four data points for the eastern lobe and seven for the northern lobe (Table 3.2). Each data point is an average of one to five spots analyzed on a single shard. Many tephra beds have variable glass chemistry and by analyzing few individual shards it is unlikely results will display the full geochemical range, potentially leading to erroneous conclusions and correlations. In this study a minimum of 10 points

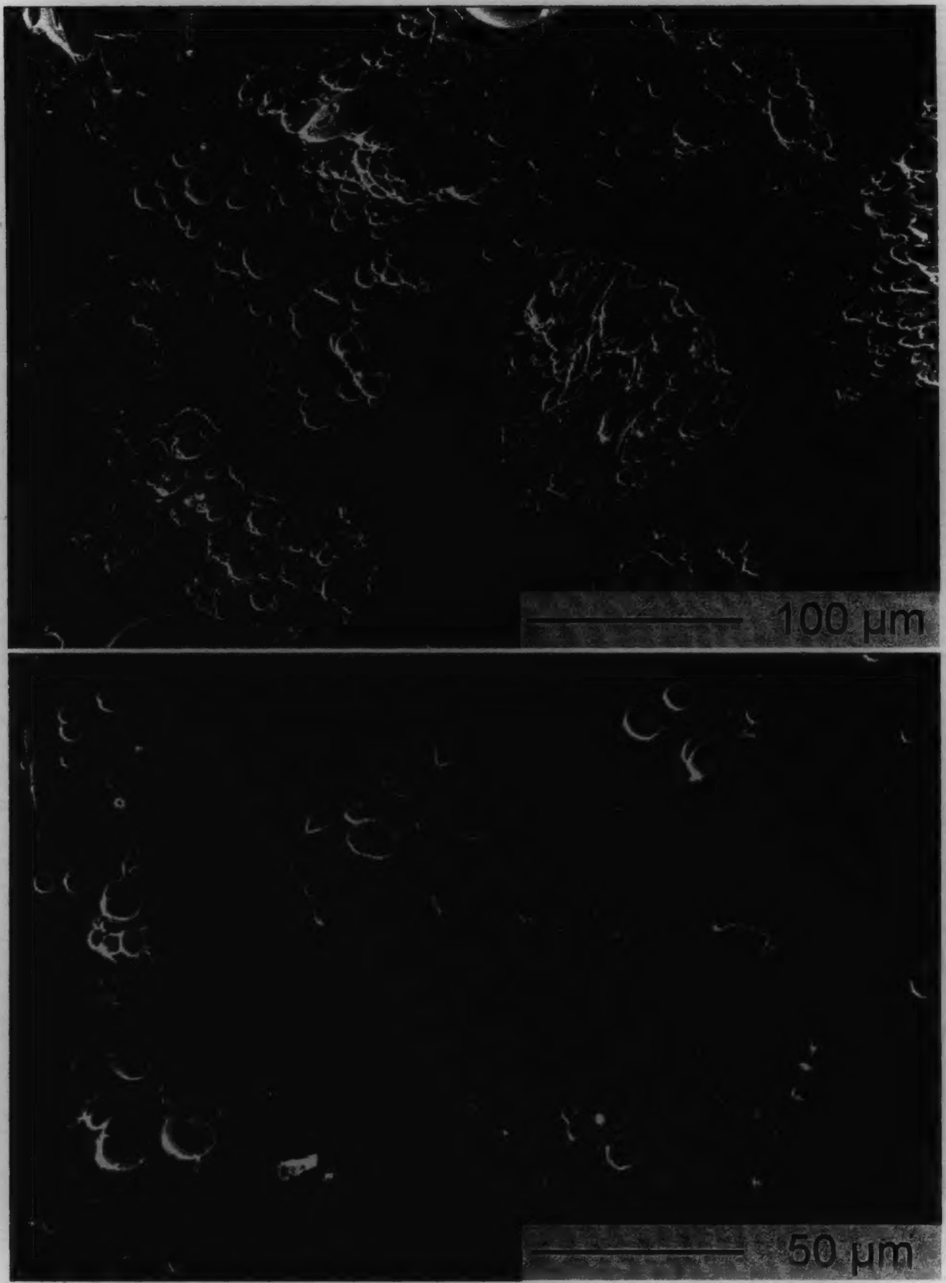


Figure 3.2: Backscatter electron images from probe mounts on the EMP. The upper and lower images are, respectively, the White River Ash eastern lobe and northern lobe. Note the thicker walls found in the northern lobe. Unfortunately, much of the glass is filled with microphenocrysts.

are reported per sample, with only one exception (Table 3.1). UA 1247 is the northern most sample of the eastern lobe on the basis of bracketing radiocarbon samples five cm above (1116±60 ^{14}C yr B.P.) and 15 cm below (1552±45 and 1585±40 ^{14}C yr B.P.) the tephra bed (Livingston, 2004). In total 289 points were analyzed for the eastern lobe and 97 for the northern lobe (Table 3.3). An effort was made to analyze different glass morphologies present in both lobes. Therefore, it is likely the glass data presented here are largely representative of variation present in both beds (Fig. 3.3). The data show that White River north has a greater range of composition with and a lower average silica value than the eastern lobe, resulting in averages opposite to Downes (1985; Table 3.3). All northern lobe samples displayed this spread, while the eastern lobe did not have any silica values lower than ~73.25 weight %. Thus, although the glass chemistry is by no means conclusive for a few individual points, it can be used as an initial guide in distinguishing between the two eruptions when sufficient points are anaylzed.

Other potential reasons for the discrepancy between this study and Downes (1985) are Na-loss and differences in secondary standards. Na-loss, which also forces SiO_2 and Al_2O_3 values higher (e.g. Morgan and London, 1996; Fig. 3.4), is often caused by too high a beam current and/or small of a beam diameter (<10μm). Downes (1985) does not report a beam diameter, but the beam current used of 250 μA would lead to Na loss, and is such a high value that it may be misreported. There is no indication of whether a secondary standard was used. The lack of a secondary standard would not permit identification of Na loss and any other problems that might have occurred during the analyses and initial standardization. Another result of not using a secondary standard (or use of a different secondary standard) is variation between the data sets.

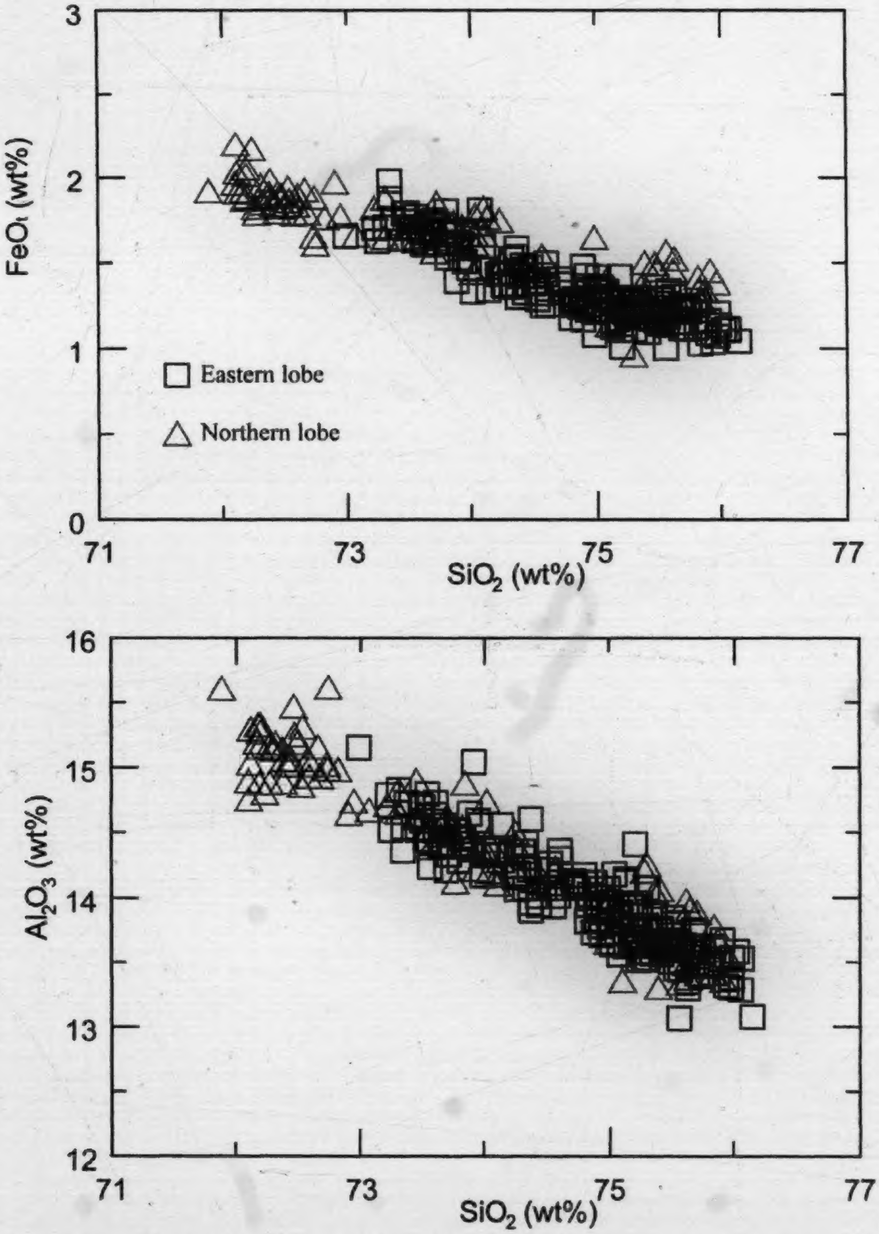


Figure 3.3: Al-Si and Fe-Si bivariate plots of selected glass shard analyses of the northern and eastern lobes of the White River ash. Although the eastern lobe completely overlaps geochemically with the northern lobe, the northern lobe has a distinct population of glass shards with a $SiO_2 < 73$ wt%.

Table 3.3: Averages of northern and eastern lobe data from Downes (1985) and this study. Downes data recast to 100% on a water-free basis for comparison. (#) =standard deviation, H_2Od=water by difference.

Oxides (wt%)	White River North (this study)		White River North (Downes 1985)		White River East (this study)		White River East (Downes 1985)	
SiO_2	73.72	(1.30)	76.36	(1.66)	74.52	(0.88)	75.39	(0.35)
TiO_2	0.21	(0.06)	0.22	(0.06)	0.18	(0.05)	0.25	(0.03)
Al_2O_3	14.47	(0.61)	14.08	(0.76)	14.15	(0.46)	14.27	(0.13)
FeO_t	1.65	(0.25)	1.43	(0.22)	1.40	(0.21)	1.64	(0.08)
MnO	0.06	(0.03)	0.04	(0.02)	0.05	(0.03)	0.04	(0.03)
MgO	0.36	(0.09)	0.26	(0.10)	0.30	(0.09)	0.40	(0.06)
CaO	1.89	(0.37)	1.65	(0.39)	1.68	(0.21)	1.88	(0.01)
Na_2O	4.13	(0.19)	2.79	(0.49)	4.03	(0.18)	3.00	(0.20)
K_2O	3.19	(0.16)	3.16	(0.18)	3.36	(0.23)	3.13	(0.11)
Cl	0.33	(0.05)	NA	NA	0.34	(0.04)	NA	NA
H_2Od	2.39	(1.61)	0.99	(1.50)	2.57	(1.43)	0.93	(1.34)
n	97		7		289		4	

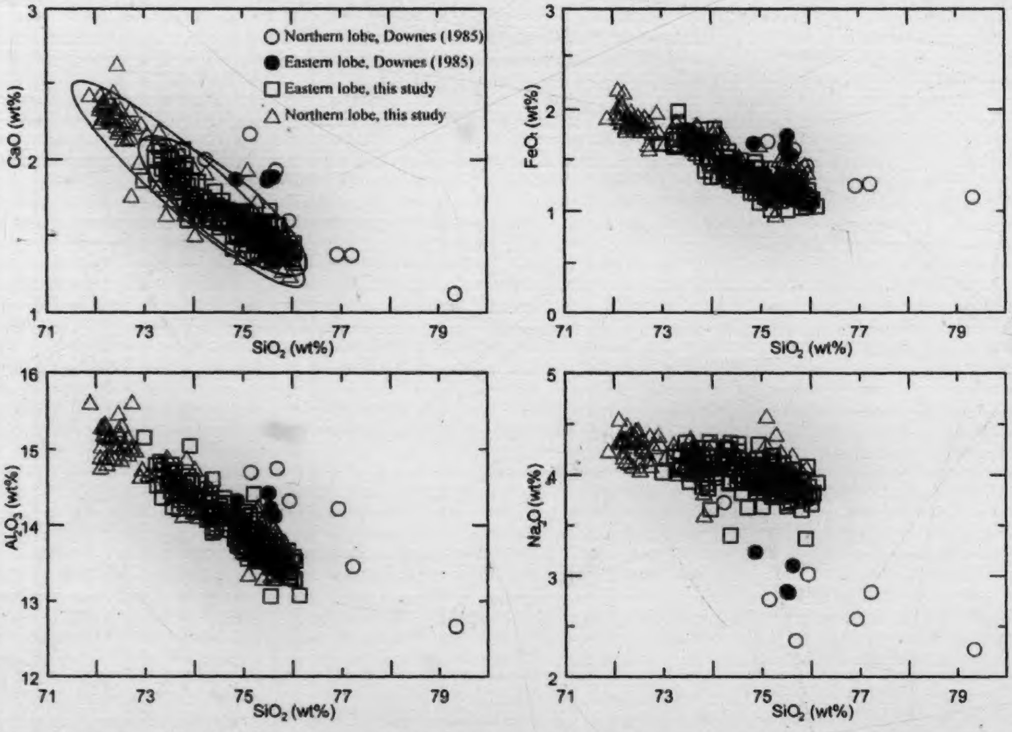


Figure 3.4: Comparison of glass geochemical data from Downes (1985) and this study. The top two plots show offset in Ca and Fe values that is likely related to standardization differences between the analyses and/or the potential lack of a secondary standard in the Downes (1985) data. The lower two plots show that the Downes (1985) data has experienced Na loss. This may be the reason why there are several distinctly high Si and Al values. Downes (1985) data are recast to 100% on a water free basis for comparison.

In contrast, the Fe-Ti oxide data for the White River Ash beds are diagnostic and easily reproducible. Lerbekmo et al. (1975) found that the northern and eastern lobes of the White River ash each contain a distinct population of Fe-Ti oxides that are easily distinguishable from one another. These data were successfully reproduced with additional data points; Table 3.4 and Fig. 3.5 present the Fe-Ti oxide data generated ofr this study. Magnetite was also analyzed but is not as diagnostic as the ferrian ilmenite populations present in the ash beds.

3.4. Conclusion

The northern and eastern lobes of the White River Ash have large ranges in their glass geochemistry. Although the variation between each bed is not decidedly significant, the bivariate plots of the glass geochemical data clearly demonstrate that the northern lobe exhibits a greater range, most notably in the lower silica end. These results illustrate the need to analyze a significant number of individual glass shards when attempting to geochemically characterize a tephra bed. The discrepancies between the data presented in this study and Downes (1985) reinforce the need to report analytical conditions and secondary standards.

Despite the differences in the ranges of glass geochemistry of the White River ash beds, Fe-Ti oxides are the preferred method to distinguish between these tephra beds. This suggests that Fe-Ti oxides may prove useful in determining differences and correlations among tephra beds from the same source that have very similar glass geochemistry, for example, the Type II Sheep Creek tephra beds, which are commonly found across Yukon and Alaska.

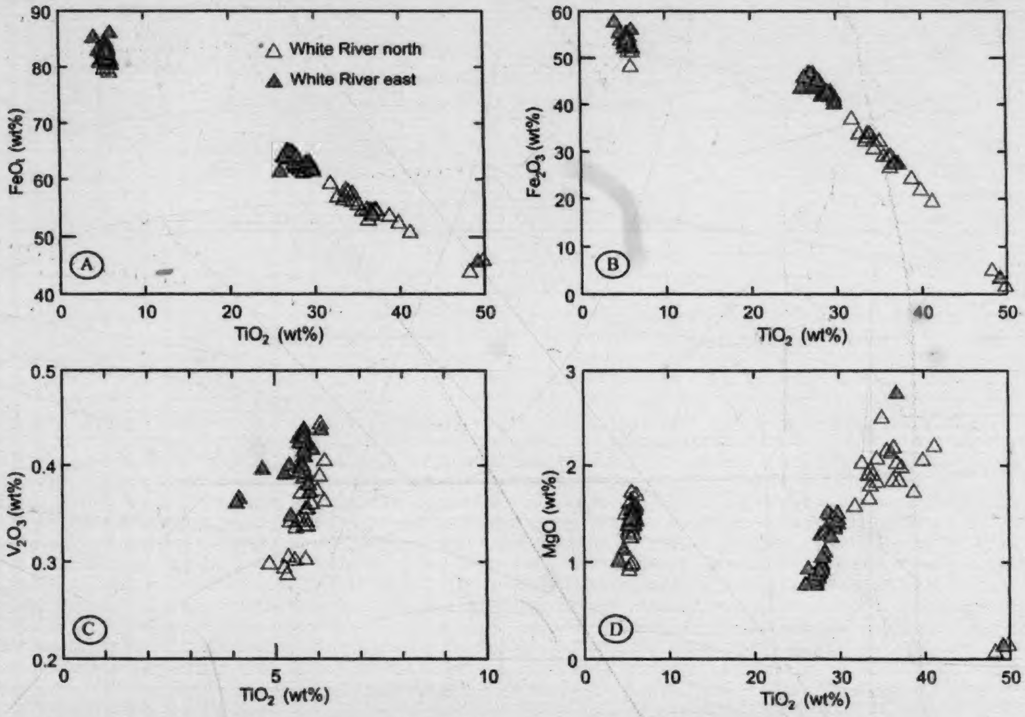


Figure 3.5: Fe-Ti oxide data for the northern and eastern lobes of the White River Ash easily distinguish the beds (A). By calculating FeO and Fe_2O_3 it is possible to determine if the Fe-Ti oxides represent ilmenite-hematite or magnetite-ulvöspinel solid solution series. These results indicate that populations below ~70 wt% FeO$_t$ are of the ilmenite-hematite solid solution series. As Ti^{4+} increases it replaces Fe^{3+}, which is why Fe_2O_3 approaches zero when the Fe-Ti oxides approach the ilmenite composition of $FeTiO_3$ (B). Fe-Ti oxides with FeO$_t$ between ~50-64 wt% are termed ferrian ilmenites, those <50 wt% FeO$_t$ are ilmenites. Populations >70 wt% FeO$_t$ are titanomagnetites of the magnetite-ulvöspinel solid solution series. Titanomagnetites of the northern and eastern lobes are similar but can be distinguished by their V_2O_3 content (C). Ferrian ilmenites also display a significant difference in their MgO (D).

Table 3.4: Dominant Fe-Ti oxide populations in the White River Ash beds.

Oxides	White River North				White River East			
(wt%)	titanomagnetite		ferrian ilmenite		titanomagnetite		ferrian ilmenite	
TiO_2	5.64	(0.34)	35.29	(2.10)	5.52	(0.45)	27.95	(1.03)
V_2O_3	0.36	(0.04)	0.44	(0.04)	0.40	(0.02)	0.45	(0.02)
Cr_2O_3	0.04	(0.02)	0.01	(0.01)	0.04	(0.01)	0.02	(0.01)
Al_2O_3	2.24	(0.16)	0.33	(0.08)	2.32	(0.20)	0.57	(1.11)
MnO	0.38	(0.03)	0.37	(0.11)	0.34	(0.02)	0.19	(0.02)
SiO_2	0.10	(0.02)	0.06	(0.07)	0.08	(0.02)	0.05	(0.02)
FeO	33.85	(0.68)	28.62	(1.74)	34.13	(0.49)	23.69	(0.66)
MgO	1.38	(0.23)	1.95	(0.21)	1.44	(0.15)	1.06	(0.26)
Fe_2O_3	52.62	(0.89)	29.96	(3.83)	53.99	(1.27)	43.73	(1.78)
Total	96.60	(0.96)	97.02	(0.93)	98.25	(1.17)	97.71	(0.79)
n	20		19		29		35	

3.5. References:

Clague, J.J., Evans, S.G., Rampton, V.N., Woodsworth, G.J., 1995. Improved age estimates for the White River and Bridge River tephras, western Canada. Canadian Journal of Earth Sciences 32, 1172-1179.

Clague, J.J., Luckman, B.H., Van Dorp, R.D., Gillbert, R., Froese D., Jensen, B.J.L., Reyes, A.V., 2006. Rapid changes in the level of Kluane Lake in Yukon Territory over the last millennium. Quaternary Research 66, 342-355.

Downes, H., 1985. Evidence for magma heterogeneity in the White River Ash (Yukon Territory). Canadian Journal of Earth Sciences 22, 929-934.

Ives, J.W., 2003. Alberta, Athapaskans and Apachean origins. In: Brink, J.W., Dormaar, J.F. (Eds), Archaeology in Alberta: A view from the New Millennium. The Archaeological Society of Alberta, Medicine Hat, pp. 256-289.

Lerbekmo, J.F., Campbell, F.A., 1969. Distribution, composition, and source of the White River Ash, Yukon Territory. Canadian Journal of Earth Sciences 6, 109-116.

Lerbekmo, J.F., Westgate, J.A., Smith, D.G.W., Denton, G.H. 1975., New data on the character and history of the White River volcanic eruption, Alaska. In: Suggate

R.P., Cresswell, M.M. (Eds), Quaternary studies. Royal Society of New Zealand, Wellington, pp. 203-209.

Livingston, J..M., 2004. Floodbed sedimentology: A new method to reconstruct paleo-ice-jam flood frequency. MSc. Thesis, University of Calgary, Calgary.

McGimsey, R.G., Richter, D.H., DuBois, G.D. and Miller, T.P., 1992. A postulated new source of the White River ash, Alaska. In: D.C. Bradley and A.C. Ford (Eds.), Geological Studies in Alaska. United States Geological Survey Bulletin 1999, pp. 212-218.

Moodie, D.W., Catchpole, A.J.W., Abel, K., 1992. Northern Athapaskan oral traditions and the White River volcano. Ethnohistory 39, 148-171.

Morgan, G.B., London, D., 1996. Optimizing the electron microprobe analysis of hydrous alkali aluminosilicate glasses. American Mineralogist 81, 1176-1185.

Preece, S.J., Westgate, J.A., Gorton, M.P., 1992. Compositional variation and provenance of late Cenozoic distal tephra beds, Fairbanks area, Alaska. Quaternary International 13/14, 97-101

Preece, S.J., Westgate, J.A., Stemper, B.S., Péwé, T.L., 1999. Tephrochronology of late Cenozoic loess at Fairbanks, central Alaska. Geological Society of America Bulletin 111, 71-90.

Preece, S.J., Westgate, J.A., Alloway, B.V., Milner, M.W., 2000. Characterization, identity, distribution, and source of late Cenozoic tephra beds in the Klondike district of the Yukon, Canada. Canadian Journal of Earth Sciences 37, 983-996.

Rampton, V.N., 1970. Neoglacial fluctuations of the Natazhat and Klutlan Glaciers, Yukon Territory, Canada. Canadian Journal of Earth Sciences 7, 1236–1263.

Robinson, S.D., 2001. Extending the Late Holocene White River Ash distribution, northwestern Canada. Arctic 54, 157-161.

Richter, D.H., Preece, S.J., McGimsey, R.G., Westgate, J.A., 1995. Mount Churchill, Alaska: source of the late Holocene White River Ash. Canadian Journal of Earth Sciences 32, 741-748.

Rosenblum, S., Brownfield, I.K., 1999. Magnetic susceptibility of minerals. United States Geological Survey Open-file Report 99-529.

Sarna-Wojcicki, A.M., Davis, J.O., 1991. Quaternary tephrochronology. In: Morrison R. (Ed), The geology of North America, vol. K-2, Quaternary nonglacial geology: conterminous U.S. Geological Society of America, Boulder, pp. 93-116

Smith, D.G., Westgate, J.A., 1969. Electron probe technique for characterizing pyroclastic deposits. Earth and Planetary Sciences Letters 5, 313-319

Westgate, J.A., Gorton, M.P. 1981. Correlation techniques in tephra studies. In: Self, S., Sparks, R.S.J (Eds), Tephra studies: proceedings of the NATO Advanced Study Institute, tephra studies as a tool in Quaternary research. D. Reidel Publishing Company, Dordrecht, pp. 73-94.

Workman, W.B., 1977. The prehistory of the southern Tutchone area: Problems in the prehistory of the North American subarctic. In: The Athapaskan Question, J.W. Helmer, S. Van Dyke and F.J. Kense (eds.), Archaeological Association of the University of Calgary, 46-54.

Workman, W.B., 1979. The significance of volcanism in the prehistory of subarctic northwest North America. In: Volcanic Activity and Human Ecology, P. Sheets and D.K. Grayson (eds.), Academic Press (New York), 339-371.

CHAPTER 4- A DISTAL TEPHRA RECORD FOR CHESTER BLUFF

Content of this chapter will be submitted for publication to Quaternary Science Reviews:
An extensive middle to late Pleistocene tephrochronologic record, Yukon Charley Rivers National Preserve, east central Alaska.
B.J.L. Jensen, D.G. Froese, S.J. Preece, J.A. Westgate

4.1. Introduction

Distal tephra beds are useful as correlative and/or chronologic markers in a variety of disciplines (e.g. Newnham et al., 1998; Zazula et al., 2005; Tyron, 2006). Tephra beds are often utilized in studies because of a lack of other material available for dating or correlation. However, tephra beds provide an important addition because they can be directly dated by a variety of methods (e.g. $^{40}Ar/^{39}Ar$, glass fission-track, etc.) but also can be precisely correlated by their geochemical signatures (e.g. Kunk, 1995; Sandhu et al., 2000). For example, tephra beds may be correlated at field sites separated by hundreds to thousands of kilometres (e.g. Westgate et al., 1983; Muhs et al., 2001; Matheus et al., 2003). Given the timeframe of an eruption and the subsequent fall-out of tephra is generally days to weeks, the sediments surrounding correlative tephra beds can be considered time-equivalent. This provides a unique 'snapshot' in time for the surrounding sediments and allows not only reconstruction of regional paleoenvironments through time, but also spatially at one time. Examples of this application of tephrochronology include linking the land-based record of Icelandic eruptions to continental Europe and ice core records of Greenland (e.g. Davies et al., 2002; Boygle, 2004; Mortensen et al., 2005), as well as correlation of New Zealand land-based records to ocean cores (e.g. Shane et al., 1995; Carter et al., 2004; Gomez et al., 2004; Alloway et al., 2007). However, the successful application of tephrochronology is strongly facilitated by recognition and characterization of previously identified tephra beds.

Eastern Beringia is the region of Yukon and Alaska that remained unglaciated throughout the late Cenozoic (Hopkins et al., 1982; Westgate et al., 1990). The preservation of fossil flora, fauna and relict permafrost within sediments make it a unique archive of paleoenvironmental change (e.g. Guthrie, 1968; Hopkins et al., 1982; Begét, 1996; Elias, 2001; Ager, 2003; Froese et al., 2006). Many of these sedimentary archives are beyond the limit of radiocarbon dating (~50 000 years) and distal tephra beds, sourced from the Aleutian Arc-Alaska Peninsula and Wrangell volcanic field, provide important chronologic control for independent dating and correlation.

Exposures in placer mining districts of Fairbanks, Alaska and the Klondike region of the Yukon Territory have been studied for several decades (e.g. Campbell, 1952; Péwé, 1955). This resulted in detailed tephrochronologic records for the Klondike and Fairbanks that have been used to date and correlate sediments of paleoenvironmental significance (e.g. Preece et al., 1999, 2000; Westgate et al., 2001). However, correlation of records between these two regions has been difficult with only four beds in common, the Dawson, VT, Old Crow and Mosquito Gulch tephra beds (Preece et al., 1999; Sandhu et al., 2000; Westgate et al., 2003a; Begét et al., 2004). A paucity of tephrochronologic records outside of these two regions has made it difficult to address this issue, as well as highlighting gaps in the sedimentary record, in particular, for the middle Pleistocene.

Chester Bluff, located in east-central Alaska between the Klondike and Fairbanks regions (Fig. 4.1), holds the potential to correlate these regions by containing tephra beds common to both. In this paper I present a detailed tephrostratigraphy of the loess at

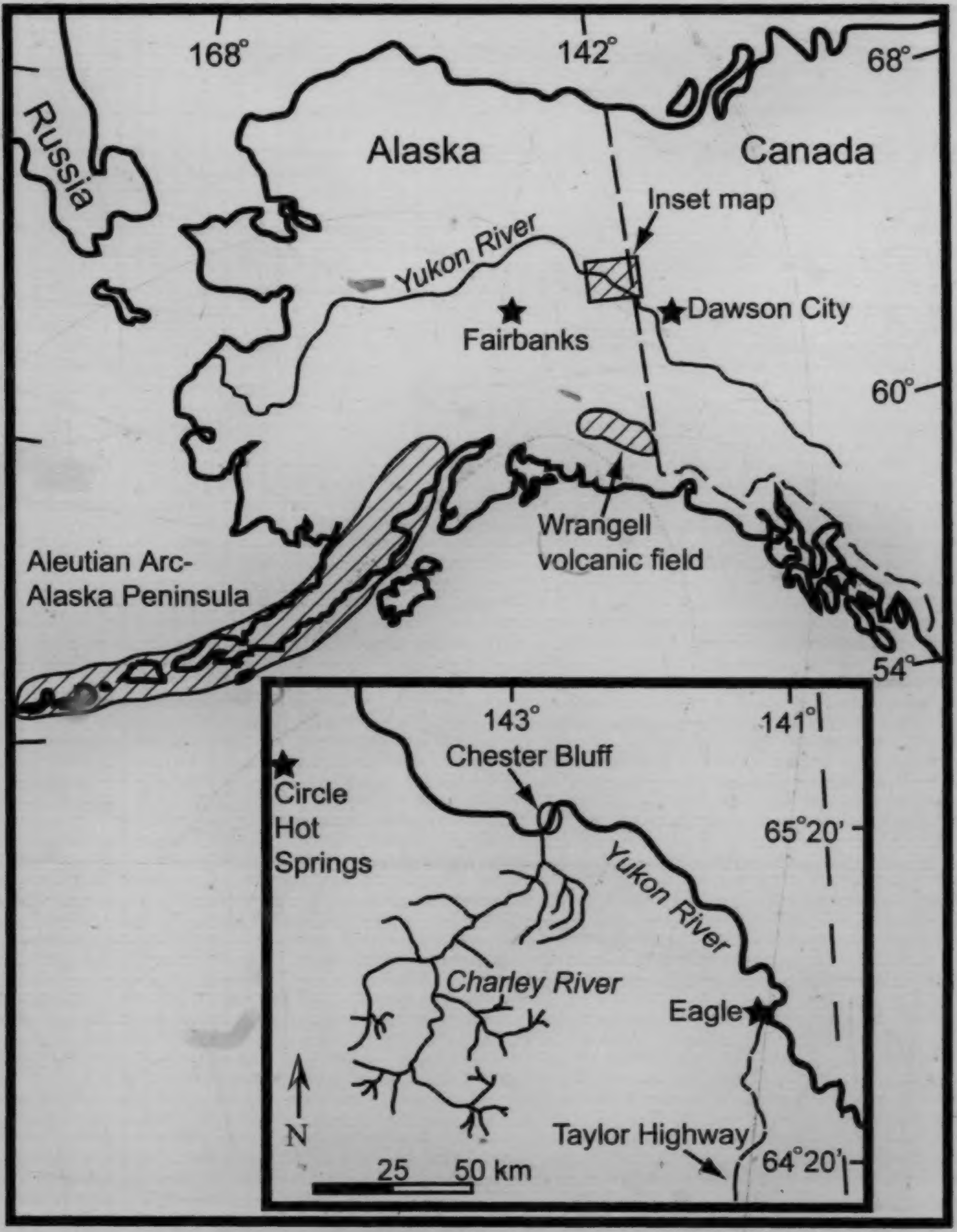

168°
142°
68°
Russia
Alaska
Canada
Inset map
Yukon River
Fairbanks
Dawson City
60°
Wrangell volcanic field
Aleutian Arc-
Alaska Peninsula
54°
143°
141°
Chester Bluff
Circle
Hot
Springs
65°20'
Yukon River
Charley River
Eagle
N
Taylor Highway
25
50 km
64°20'

Figure 4.1: Location map of study area. The bluffs are located in Yukon Charley Rivers National Preserve

Chester Bluff representing one of the most complete terrestrial middle to late Pleistocene records in eastern Beringia.

4.2. Study Area and previous work

Chester Bluff is located in Yukon Charley Rivers National Preserve in east-central Alaska, on the northwest bank of the Yukon River directly upstream from its confluence with the Charley River (Fig. 4.1). Chester Bluff is a terrace comprising a series of individual bluffs dissected by gullies that extend for about 3 km. The south-facing bluffs are dry and substantial excavation (>2 m) is needed to reach frozen sediments.

Chester Bluff can be broadly differentiated into four units. The base of the exposure is a 10 m high bedrock terrace of the Cretaceous Biederman Formation. Deposited on the terrace is 8 to 10 m of paleo-Yukon River gravel with approximately 5 to 10 meters of gravel, sand and silt rhythmites, overlain by planar-bedded massive sand, above the gravel. Massive loess interbedded with multiple organic horizons and tephra beds cap the sequence, this unit has is up to 40 m thick.

Froese et al. (2003) examined the gravel, sand and silt deposits and attributed them to outburst flood deposits associated with multiple glaciations that intermittently blocked the Charley River in the adjacent Yukon-Tanana Upland. The GI tephra, deposited in loess ~ 8 m above the outburst flood sediments, with glass fission-track age of 560 000 ± 80 000 years provides a minimum age for the outburst flood sediments. A maximum age of 780 000 years is based on paleomagnetic data that indicates the entire bluff is normally magnetized (Froese et al., 2003).

Within the outburst flood sediments is an organic silt unit, dominated by spruce pollen, representing an interglaciation, dividing the flood events into two groups, each representing an individual glaciation of the Yukon-Tanana Upland. An additional organic silt unit, representing an interglacial or warm interstadial, is present above the planar-bedded sand unit at the base of the loess. This unit is ~4.5 m below the Charley River (CR) tephra bed (Froese et al., 2003), that is found at every bluff examined thus far. CR is deposited within an organic silt unit near the base of the loess. This unit was sampled thoroughly for pollen and also represents warm interstadial or interglacial conditions (Froese et al., 2003).

4.3. Methods

4.3.1. Field methods

Chester Bluff comprises several individual bluffs separated by steep forested gullies. I focused my investigations on three well-exposed bluffs termed Sites A, B and C (Fig. 4.2). The exposures were trenched from the bluff tops to the base of the loess as continuously as possible. A near vertical slope at Site A and thick colluvium at Site B prevented us from completing the trenches at these two sites (Fig. 4.2). Site C was successfully logged from the top of the bluff to the first major sand unit associated with the flood deposits. Two trenches were excavated on either side of Site A to examine the lateral continuity of the tephra beds. Bulk samples were collected from the uppermost organic horizon at Site B and the prominent organic horizon at ~ 39 m at Site C for plant macrofossils.

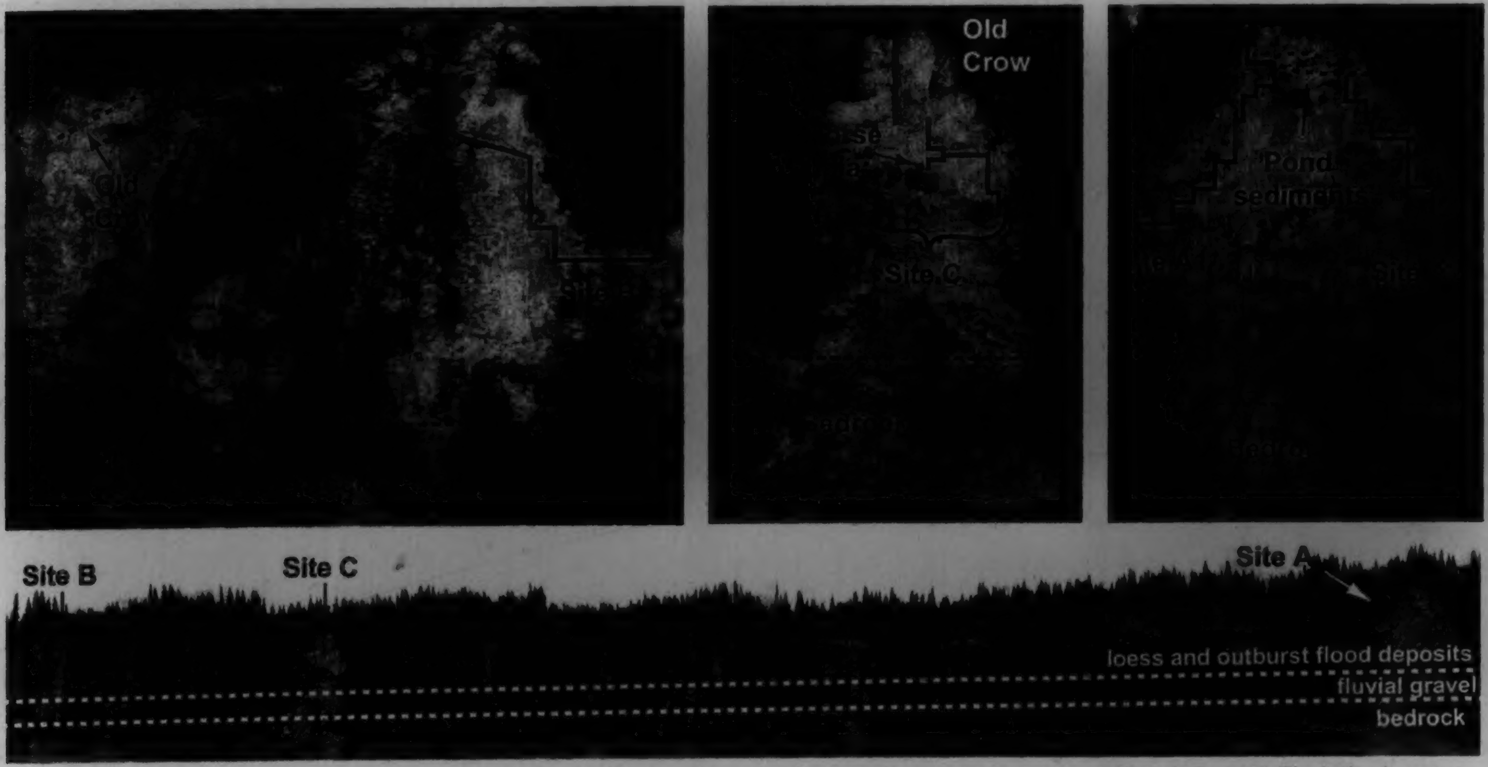

Old
Crow
Site C
Pond
sediments
Site B
Site C
Site A
loess and outburst flood deposits
fluvial gravel
bedrock

Figure 4.2: Location of studied exposures at Chester Bluff, as well as trenches and major features not at main trenches at Sites A, B and C. The bedrock contact at Site B is distorted due to photo-mosaic effects.

4.3.2. Analytical methods

Bulk tephra samples were wet sieved into multiple size fractions using no. 60 (250 μm), no. 100 (149 μm), no. 200 (74 μm) and no. 325 (44 μm) sieves. A small fraction of the bulk samples were test-sieved first to check for shards < 44 μm. In cases where excessive sample loss resulted, the remaining bulk sample was dry-sieved and material finer than 44 μm was captured. Once dried, size fractions were assessed under a stereoscopic microscope to determine the fraction containing glass most suitable for analyses by electron microprobe (EMP). Glass was separated from the heavy mineral fraction using the heavy liquid tetrabromoethane (TBE) at a density of ~2.4 g/ml. A hand magnet was used to remove magnetite from the heavy mineral fraction of the separate; the remainder was run through a Frantz Separator to isolate Fe-Ti oxides, with settings after Rosenblum and Brownfield (1999) for ilmenite. Each tephra bed was mounted within an acrylic puck, four samples per puck. After mounting pucks are polished and coated with carbon prior to EMP analyses.

Tephra beds are characterized by major and minor element geochemistry of glass; SiO_2, TiO_2, Al_2O_3, FeO_t, MnO, MgO, CaO, Na_2O, K_2O and Cl. Fe-Ti oxides were characterized for GI, CR, Biederman (BT), Coal Creek (CC), the uppermost bed of the Chester Bluff (CB_1), Preido Hill and Slaven's Roadhouse (SR) tephra beds. Glass shard morphology and petrography of tephra beds were examined with a polarizing light microscope.

Glass shards, Fe-Ti oxides were analyzed on a JEOL superprobe at the University of Alberta by wavelength dispersive spectrometry (WDS). A defocused beam of 10 μm diameter, 15 keV accelerating voltage and 6 nA beam current were used to minimise Na and K migration during glass analyses. Two samples of known composition (secondary standards) were run with all tephra samples; UA 5831, a rhyolitic obsidian, and a reference sample of Old Crow tephra, a well-characterized, secondarily hydrated, tephra bed (e.g. Westgate et al., 1983, 1985; Preece et al., 1999, 2000). Fe-Ti oxides were analyzed at 20 keV, with a 1 μm beam diameter and 20 nA beam current, using secondary standards ilmenite (USNM 96189), magnetite (USNM 114887) and a non-certified standard, the Elba hematite. The hematite was employed after results suggested certified values for the magnetite were incorrect.

Geochemical results were compared to a database of previously characterized Yukon and Alaska tephra beds at the University of Toronto. When the database query returned a potential match, the unknown tephra was reanalyzed at the same time, under the same instrumental conditions, as the potential correlative to confirm the correlation. Re-analyses of potential correlative tephra beds is an integral step due to the geochemical similarity of many Yukon-Alaska tephra beds (e.g. Westgate and Preece, 2005).

4.4. Stratigraphy

Excavation of the site led to the recovery of ~80 tephra samples, of which nineteen were successfully characterized. Fifteen are newly described and four are previously known beds (Fig. 4.3). Each tephra bed is named for a geographic locale in the area, excepting those previously known (Table 4.1). In the following section I present a generalized loess stratigraphy followed by a detailed account of the tephrostratigraphy.

Table 4.1: Tephra names and relevant information. Listed from youngest to oldest

Tephra name	Abbreviation	Stratigraphic position/age	Reference
Variegated	VT	massive loess; 77.8 ± 4.1 ka	Sandu et al. (2001), Berger (2003), this study[a]
Woodchopper Creek	WC	massive loess	this study
Old Crow	OC	massive loess, below organic silt; 140 ± 10 ka	Westgate et al. (1990)[b]
Biederman	BT	within and above humic organic horizon	this study
Coal Creek	CC	massive loess	this study
Charley Village	CV	massive loess	this study
Chester Bluff	CB	within and above interglacial unit; MIS 7, 11 or 13	this study
white bed	CB_1	upper 3 beds of CB	this study
pink bed	CB_2	lowest bed of CB	this study
Kandik River	KR	massive loess, some organic material	this study
Andrew Creek	AC	waterlain silt? Directly above organic-rich silt	this study
Yukon Tanana	YT	within a peaty layer of a prominent organic horizon	this study
Ben Creek	BC	within a humic layer of a prominent organic horizon	this study
Preido Hill	PrH	massive loess, directly below a prominent organic horizon	Preece et al. (2000), this study[c]
McGregor Cabin	MC	massive loess, directly below Preido Hill	this study
Tom King	TK	massive loess	this study
Slavens Roadhouse	SR	massive loess	this study
Beaton Pup	BP	massive loess	this study
Geophysical Institute	GI	heavily reworked weathered loess; 560 ± 80 ka	Froese et al. (2003), this study[d]
Charley River	CR	within and above fissile organic-rich silt	Froese et al. (2003), this study

a- Known from both the Fairbanks and Klondike regions

b- Major regional stratigraphic marker across eastern Beringia

c- Known from the Klondike region

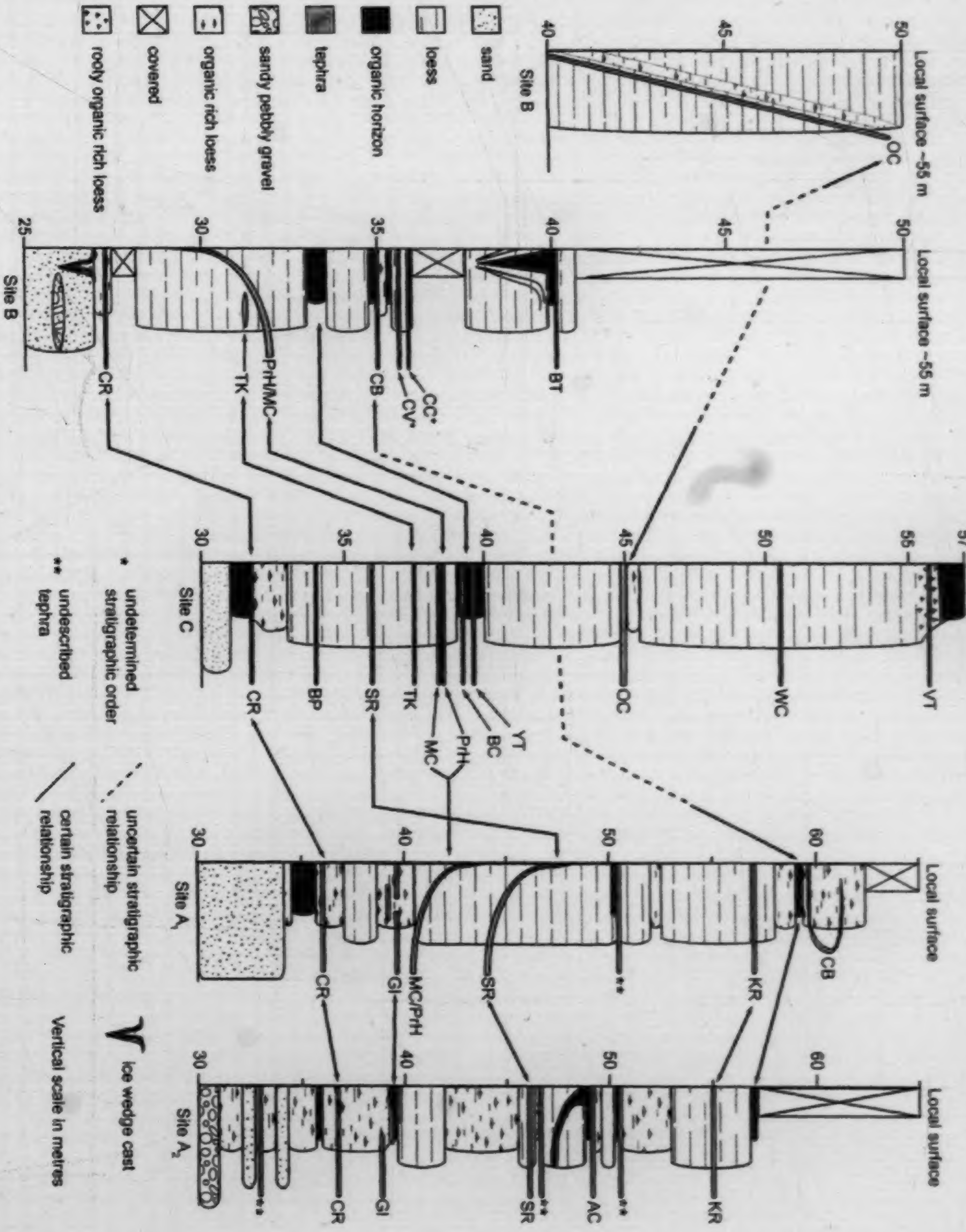
d- Known from the Fairbanks region

4.4.1. General stratigraphy of loess

The loess is commonly heavily mottled and inorganic, generally an olive grey to greyish brown with rare humified organic stringers. Mottling is commonly a distinct reddish brown, most likely caused by iron oxidation. Organic-rich loess tends to be dark greyish-brown to dark reddish-brown with frequent small organic stringers and is commonly associated with prominent organic horizons. The loess tends to be heavily deformed, and possibly re-mobilized (as indicated by the organic and tephra units), with multiple unconformities made evident by the different, although complimentary, suite of tephra beds at the three sites (Fig. 4.3). Plant macrofossils are common although most are heavily oxidized or humified. Multiple organic horizons are present at each site and plant macrofossils within the horizons are poorly preserved and identifiable material is rare. While plant macrofossils are relatively common, large mammal fossils are rare; a single horse tibia is the only find thus far (Fig. 4.2). The loess, organic horizons and tephra beds are commonly faulted and occasionally overturned. Only a handful of tephra beds and organic horizons display features characteristic of primary deposition.

4.4.2. Tephrostratigraphy

In this section I present the stratigraphic context of tephra beds found at Sites A, B and C, and establish their association to sedimentary units of interest (Fig. 4.3). Details of petrology and geochemistry follow in section 5. Tephra beds are described from the oldest to youngest (Table 4.1).


Local surface ~55 m
Site B
OC
50
45
40
sand
loess
organic horizon
tephra
sandy pebbly gravel
organic rich loess
covered
rooty organic rich loess
Local surface ~55 m
Site B
BT
CC*
CV*
CB
PrH/MC
TK
CR
35
30
25
Local surface
Site C
57
55
VT
WC
OC
YT
BC
PrH
MC
TK
SR
BP
CR
* undetermined stratigraphic order
** undescribed tephra
Local surface
Site A1
60
CB
KR
**
SR
MC/PrH
GI
CR
uncertain stratigraphic relationship
certain stratigraphic relationship
Local surface
Site A2
KR
AC
**
SR
GI
CR
ice wedge cast
Vertical scale in metres

The only tephra bed common to all three sites is the Charley River tephra (CR), located 1-7 m above the base of the loess. CR is reworked into or directly above distinct fissile organic-rich silt at all three sites (Fig. 4.3, 4.4d). This silt is correlative to the organic unit described by Froese et al. (2003). This unit was sampled thoroughly for pollen. Basal samples are rich in Gramineae, *Betula, Alnus* and Ericaceacae but poor in spruce, suggesting deposition during an interstade or early part of an interglaciation. At the top of the unit spruce pollen has increased, signifying establishment of warm interstadial or interglacial conditions (Froese et al., 2003). CR is found as pods up to 4 cm thick and 10 cm long and separate pods can be traced at about same stratigraphic position across all sections. The bed tends to have an orangey-pink cast to it, possibly due to its stratigraphic setting, when not reworked into the organic sediments CR tends to be white. The lateral continuity of CR across the bluffs suggests that CR was deposited when the site was relatively level and loess had not aggraded enough to form a complex gully-bluff network like the one that is seen today.

The different sequence of tephra beds above CR at each site suggests the presence of a major unconformity directly above the tephra bed. GI is only present at Site A, with pinkish pods up to 10 cm thick and 30 cm long, reworked with up to 60 cm vertical relief. An organic-rich unit is associated with the GI tephra. Some bedding is visible within this unit at Site A_2, comprising a reddish-brown organic layer interbedded with calcareous grey silt, with occasional woody lenses up to 2 cm thick. More commonly it is heavily reworked within deep red loess that appears to be a Bm horizon (Fig. 4.4f).

The Beaton Pup (BP) tephra is 3.25 m above CR at Site C where it forms a white bed up to 0.5 cm thick with slightly diffuse contacts. BP is deposited in massive loess that

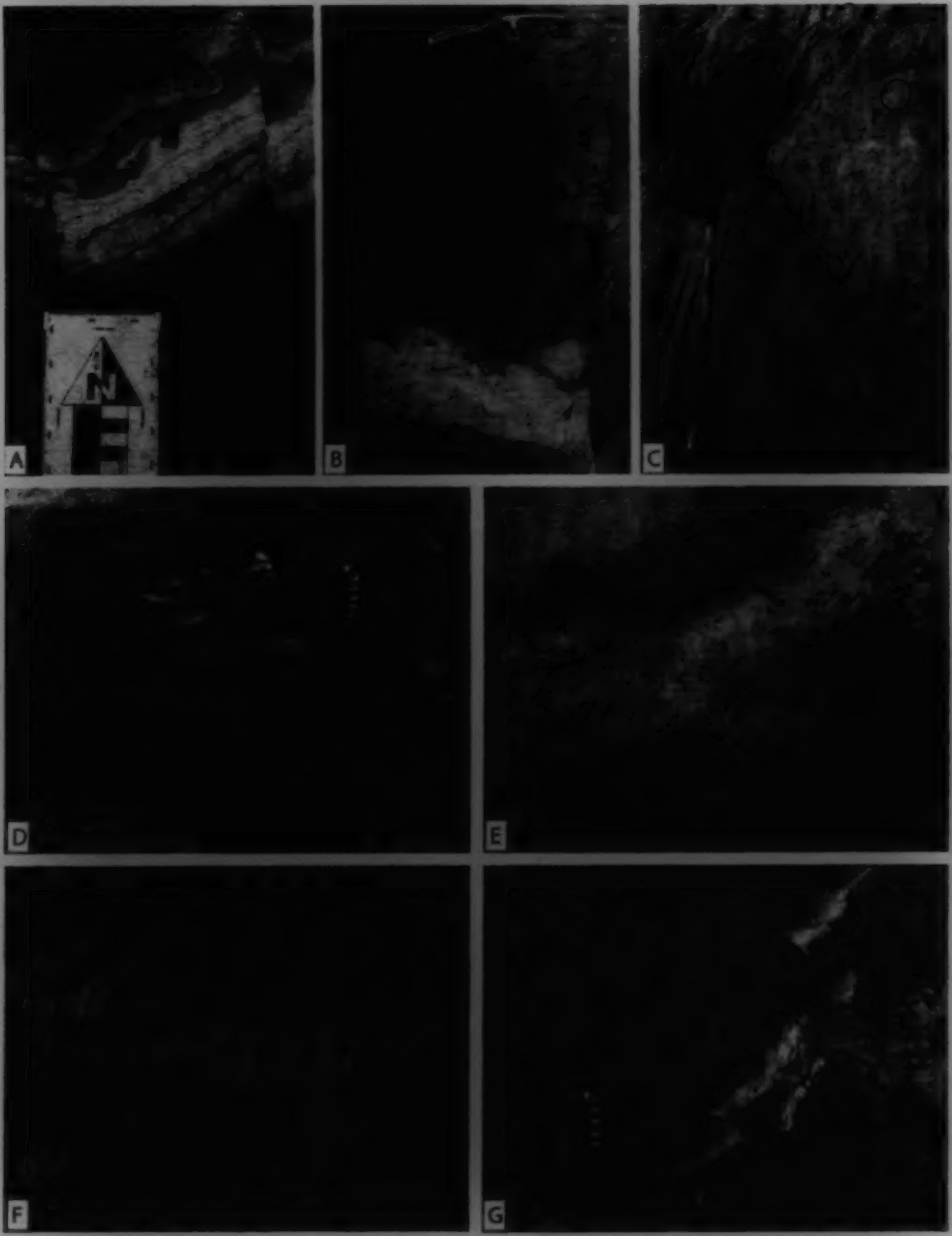


Figure 4.4: Different styles of tephra deposition at Chester Bluff. (A) CB_1 and CB_2, the latter below the dashed line; (B) OC below organic-rich silt; (C) BT falling into and running across an ice-wedge cast, delineated by the dashed line; (D) CR in its typical stratigraphic setting within a fissile organic silt, although it is present at times above the silt; (E) VT is faulted and heavily contaminated by the loess it is deposited in; (F) GI in deep-red loess, heavily reworked; (G) KR faulted downward but displaying some primary bedding features such as sharp contacts and subtle grading. Pen knife handle = 9cm, ice axe = 65 cm, shovel = 1.25 m.

is relatively rich in rootlets and small wood. It is laterally continuous across 4 m but was not further excavated beneath thick colluvium. The Slaven's Roadhouse tephra (SR) is present 2 m above BP and is the lowest of 6 tephra beds- Tom King (TK), MacGregor Cabin (MC), Preido Hill, Ben Creek (BC) and Yukon Tanana (YT)- found within ~ 2 m of one another at Site C (Fig. 4.3, 4.5a,b).

A 6 m wide trench was excavated to fully delineate the relationship of the tephra beds to one another. SR, TK, MC and Preido Hill are deposited within greyish brown loess 0.5-1 m below a major organic horizon. The loess becomes progressively richer in organic material towards the base of the horizon. At the downstream end of the 6 m lateral section the tephra are reworked and faulted downward; a horse tibia (J. Burns, pers. comm.) was located reworked with Preido Hill and SR. At the upstream end, the major organic horizon above SR, TK, MC and Preido Hill is deformed along its base, causing the tephra beds to be overturned and partially reworked into the base of the unit (Fig. 4.5c). All can be followed in stratigraphic position across the 6 m lateral exposure at Site C. At Site A_1 MC is likely reworked with Preido Hill, as indicated by geochemical data presented in the following section. SR, in contrast to Site C, is present ~ 2 m above the reworked Preido Hill/MC (Fig. 4.3). The tephra beds are heavily faulted, reworked and dipping steeply, vertically in sections. At Site A_1 the loess associated with the reworked Preido Hill/MC and SR at is strongly mottled and Fe-stained, including small organic horizons that are reworked and overturned. It is possible that solifluction caused this mottling and overturning of the tephra beds or a block of silt that faulted, obscuring the true stratigraphic position of the tephra beds. A prominent organic horizon at Site B, tentatively correlated to the horizon at Site C, overlies TK and Preido Hill. Both tephra

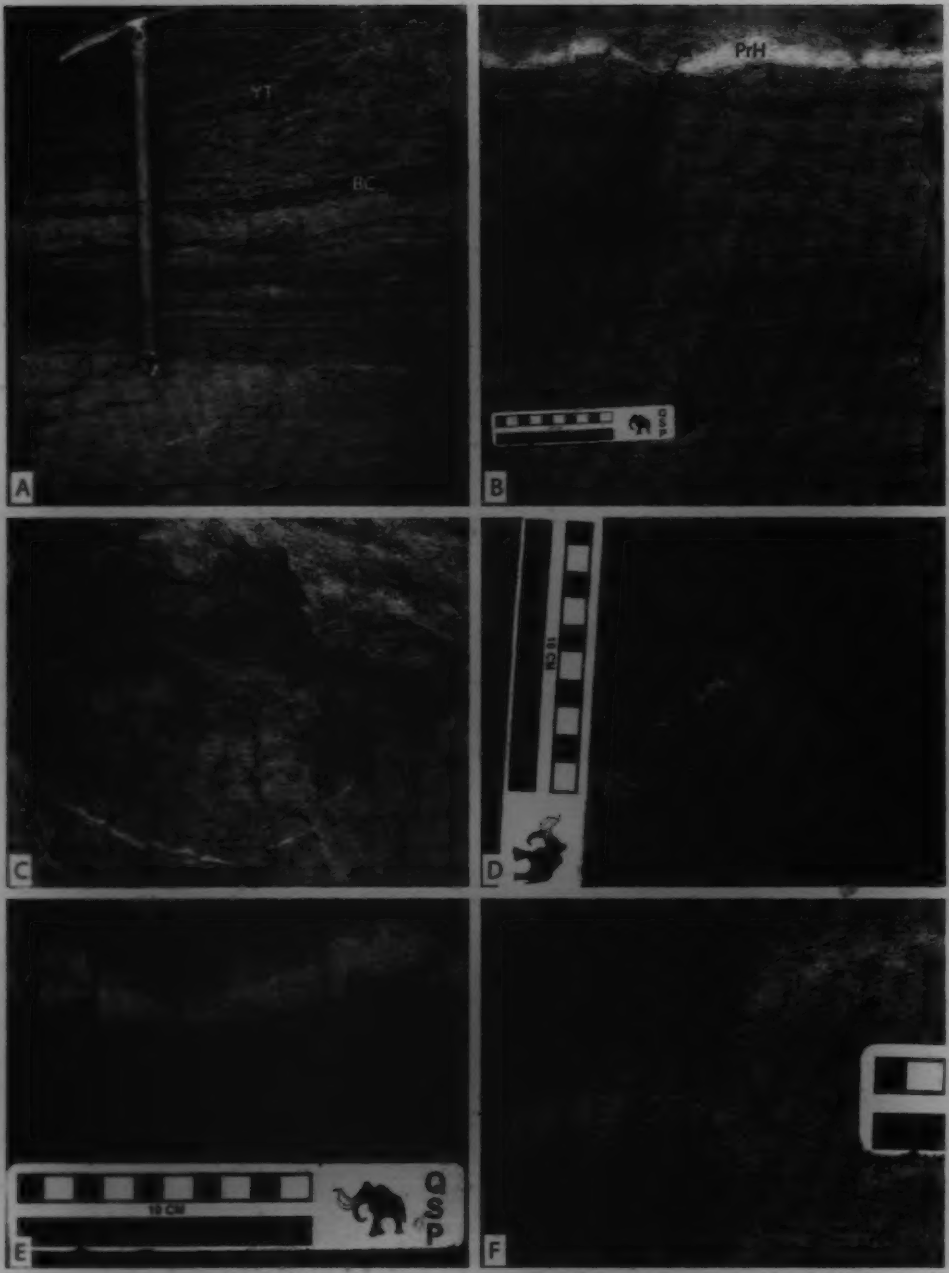


Figure 4.5: Tephra beds associated with the major organic horizon at Site C. (A) PrH and MC (28, 29, 30a, 30b in photo) reworked below and into the base of the organic horizon; BC located in the organic horizon delineated by dashed line; YT found during bulk sampling in the circled area; (B) PrH, MC, TK and SR in inferred original stratigraphic order; (C) PrH and MC (TK and SR present but not visible in photo) overturned at the base of the organic horizon, the dashed line delineates the direction of overturning; (D) SR is thin and wispy but can be followed across the section; (E) PrH is the thicker upper bed, MC the thinner one directly below it; (F) yellowish and diffuse TK is thicker and more continuous than SR (not in photo, see D) but often more difficult to spot. Ice axe = 65 cm

are strongly deformed and faulted down vertically over 3 m towards the downstream side of the exposure.

The prominent organic horizon directly above Preido Hill at Site C is > 1 m thick and consists of a series of peaty layers interbedded with organic-rich silt horizons, thin silt laminae and some humified organic beds (Fig. 4.5a). Near the top of the horizon it becomes more massive, a deep reddish-brown organic-rich silt. A possible correlative organic horizon at Site B is not as thick or rich in organic material while containing small ripples (< 1 cm) that suggest shallow water was present at times. At Site C the organic horizon contains two tephra beds (Fig. 4.3, 4.5a). Ben Creek (BC) tephra is about 10 cm above the base of the organic horizon within a distinct humified organic-rich bed. It forms creamy pink pods up to 6 cm long and 1 cm thick and is discontinuous over 2 m. A single isolated white pod of the Yukon Tanana (YT) tephra, 1.5 cm thick and 3 cm long, was found 20 cm above BC in a thick fibrous organic bed.

Bulk samples were collected from the organic beds associated with BC and YT, as well as near the top of the organic horizon. Identifiable material was rare and poorly preserved, but all three samples contained spruce needle fragments, beetle and other insect parts and *Cenococcum* fungal sclerotia. The lowermost sample had fragments of mesic and potentially aquatic taxa such as *Carex*, Juncaceae and *Ranunculus*. Bryophyte stems and leaves were found in both samples associated with the tephra beds. The presence of spruce needle fragments indicates that the organic horizon represents a warm interstadial or interglacial. The loss of the mesic and potentially aquatic taxa coincides with the change from humic and peat-like material to more massive reddish organic rich silt at the top of the horizon. The intense reddish-brown organic rich loess at the top of the horizon represents a Bm-horizon, 20-40 cm thick and tracked laterally for ~ 4 m until buried under colluvium. The development of a Bm horizon of this size is comparable to what is seen in modern sites in this area with the same exposure and sediment (e.g. Furbush and Schoephorster, 1977; Mulligan, 2004; Pink, 2005). The humic layers could have been deposited when conditions favoured development of organic horizons, but loess was still aggrading. Subsequently, conditions stabilized enough to establish a soil and associated Bm-horizon, although the A-horizon was not preserved due to the remobilization by the overlying loess.

The Andrew Creek (AC) tephra and Kandik River (KR) tephra were only found at Site A, indicating an unconformity at Sites B and C above the major organic horizon that overlies Preido Hill and other associated tephra beds. AC tephra, white, up to 0.5 cm thick and continuous over 75 cm, is present directly above a highly deformed organic-rich horizon, partially reworked into thinly laminated silt with detrital plant material and rare ripples < 1 cm thick. KR is present within massive loess and is deformed and faulted with some organic material. The tephra has an orangey hue, is up to 1 cm thick, and is semi continuous across Site A (Fig. 4.4g).

The Chester Bluff (CB) tephra is present at Sites A and B, and although partially reworked, includes exposures of exceptionally preserved primary bedding. At Site A_1 the tephra bed comprises of four individual beds of ash divided by thin laminae of silt, likely representing several eruptions from the same source that occurred over a period of days to weeks to possibly years (Fig. 4.4a). The lowermost layer of tephra is pink, ≤ 1 cm thick and separated by ≤ 2 cm of silt from the overlying beds, and is referred to here as CB_2. The next two beds have some Fe-staining but have a distinct salt and pepper appearance and are up to 2.5 cm thick. The uppermost bed is the thickest, up to 5 cm, also has a salt and pepper appearance, but displays winnowing, with heavier phenocrysts concentrated near the base of the bed. These three beds are collectively termed CB_1. At both sites CB is associated with an organic horizon described by Bigelow (2003). The tephra bed is present above, but is also deformed and reworked within the organic horizon. Two samples collected at Site A were examined for plant macrofossils and results indicate an interglacial environment with abundant spruce. The other plants present, such as various aquatic taxa (e.g. *Callitriche*) and other moisture loving plants (e.g. *Carex*) indicate deposition in and near a pond-like environment. The presence of two *Cassiope mertensiana* leaves is interesting since this taxon does not presently extend further north than northern Southeast Alaska and northern British Columbia. Otherwise, the plant macrofossils present are quite similar to that of the modern community (Bigelow, 2003). The correlative organic horizon at Site B is much poorer in plant macrofossils and reworked, but is distinctively deep purple to reddish-brown.

There are two tephra beds at Site B, the Coal Creek (CC) and Charley Village (CV) tephra, directly above CB. Both are thin (<1cm), diffuse and discontinuous within massive loess approximately 1 m above CB. The exact stratigraphic position of CC in regards to CV is unclear since it was unsuccessfully recollected during this study, although it was likely several cms above CV. All three tephra beds are faulted steeply toward the downstream end of the bluff, as is seen with Preido Hill in the same section. The Biederman tephra (BT) is only present at Site B. BT is up to 2 cm thick, forms pods up to 10 cm long, has a salt and pepper appearance and runs semi-continuously over 8 m. It either rests directly on the surface or is reworked into the upper-most organic unit at

Site B. At the upstream end of the exposure the organic unit is over-thickened and locally draped into an ice wedge cast that is about 1.7 m deep (Fig. 4.4b). The ice wedge cast fill includes ~ 1 m of reworked organic-rich loess, indicating the ice wedge melted out when the organic material was accumulating on the surface and continued after the cast was filled. Although BT generally remains in the top few cms of the organic horizon, at the ice wedge cast it is more heavily reworked and rare pods are present in the loess that fills the ice wedge cast (Fig. 4.4b). On the downstream end of the exposure, BT can be traced at the same elevation until it is truncated by a modern gully. The lack of pronounced faulting of BT toward the downstream end of the exposure, as seen with CC, CV, CB and Preido Hill directly below BT, suggest a local unconformity. The organic unit associated with BT is up to 50 cm thick and is strongly humified with abundant wood fragments and charcoal. Initial investigation of plant macrofossils revealed them to be poorly preserved and commonly charred. Although rare, spruce needle fragments and *Carex* achenes are present, along with *Rubus* cf. *idaeus* achenes, *Cenococcum* fungal sclerotia and rare beetle and other insect parts. The macrofossil assemblage of the organic horizon suggests that it represents either a warm interstadial or interglacial conditions.

Old Crow tephra is present at Site B approximately 30 m downstream from the main stratigraphic section. It is up to 10 cm thick and heavily reworked within dark brown organic-rich silt. Old Crow can be traced laterally for over 10 m, and rises steeply towards the top of the upstream end of the bluff (Fig. 4.3). Although Old Crow could not be traced to the main excavated trench at Site B, projecting its position suggests it stratigraphically overlies BT (Fig. 4.3). At Site C, Old Crow is up to 25 cm thick and continuous across the bluff. It is present 5 m above the major organic horizon where BC and YT are found. The 5 m of sediment that separate the organic horizon and Old Crow consist of remobilized, massive and inorganic loess. The base of the tephra has a sharp contact and is Fe stained; the upper contact is diffuse and partially reworked (Fig. 4.4b). The organic rich unit 20-40 cm above Old Crow is deep brownish purple, up to 60 cm thick and appears very similar to the organic horizon associated with CB at Site B.

The Woodchopper Creek (WC) and VT tephra beds are only present at Site C. WC, ~5 m above Old Crow, is a white bed up to 0.3 cm thick and continuous over 4 m. It has diffuse contacts with surrounding massive loess and is faulted downward over ~1 m. VT tephra is wispy, grey, up to 0.5 cm thick, with slightly diffuse contacts and continuous across 2 m (Fig. 4.4e). It is deposited in loose, reworked loess with modern root penetration.

4.5. Characterization of tephra beds

4.5.1. General characteristics of Yukon-Alaska tephra beds

Most distal tephra beds in Yukon and Alaska are sourced from either the Wrangell volcanic field (WVF) or the Aleutian-Arc Alaska Peninsula (AAAP) regions (Fig. 4.1). Glass morphology, petrology, and major and trace element data often allow categorization of these tephra beds into Type I beds from the AAAP and Type II beds from the WVF and/or Hayes volcano, located on the northeastern end of the Alaska Peninsula (Westgate et al. 2004). Type I beds are typically creamy, pink or grey with bubble wall shards, low vesicular pumice and rare brown glass. They contain fewer than 20% phenocrysts, which are dominated by plagioclase, ortho- and clino-pyroxenes with minor and trace biotite, Fe-Ti oxides, amphibole, apatite and zircon. Type II beds are generally white or have a "salt and pepper" appearance as a result of phenocrysts present.

They are dominated by highly inflated frothy pumice and clear glass and often contain over 20% phenocrysts, dominated by plagioclase, hornblende and orthopyroxene with minor and trace Fe-Ti oxides, red amphibole, apatite and zircon. In general, at the same SiO_2 wt%, Type I beds will display higher FeOt, TiO_2, Cs, Hf and Sc, and lower Al_2O_3, CaO and Sr. REE abundance plot for Type I beds have a gentle profile with La/Yb < 13 and a well developed negative Eu anomaly. Comparatively, Type II beds have a weakly developed or absent Eu anomaly and a steep REE abundance plot of La/Yb > 13. (Preece et al., 1992, 1999, 2000).

4.5.2. Classification of Chester Bluff tephra beds

Sites A, B and C at Chester Bluff host nineteen distinct tephra beds. Of these, twelve are Type II beds, four are Type I and three are not readily classifiable (Fig. 4.6).

The Type II beds are WC, BT, CC, CV, CB_1, CB_2, KR, AC, Preido Hill, MC, TK, and CR. Most display features typical of Type II beds: highly inflated frothy pumice, abundant phenocrysts dominated by amphibole (hornblende) and feldspar (plagioclase). BT has highly inflated pumice (Fig. 4.7a) and is particularly rich in phenocrysts, which are overwhelmingly hornblende. CB_2 is distinguishable from CB_1 by a higher percentage of thick-walled pumice that is rich in microcrysts and a lower percentage of phenocrysts (Fig. 4.7b, c). CB_2 is richer in orthopyroxenes and has a distinct population of oxyhornblende. CC, CV, KR, AC, WC and CB_1 have very similar glass morphology (Fig. 4.7d,e) and phenocryst populations. CC is rich in hornblende and orthopyroxene, the feldspar grains are commonly zoned. A high percentage of feldspar in AC displays albite twinning. CV, KR, WC and AC are contaminated by detrital material but also appear to

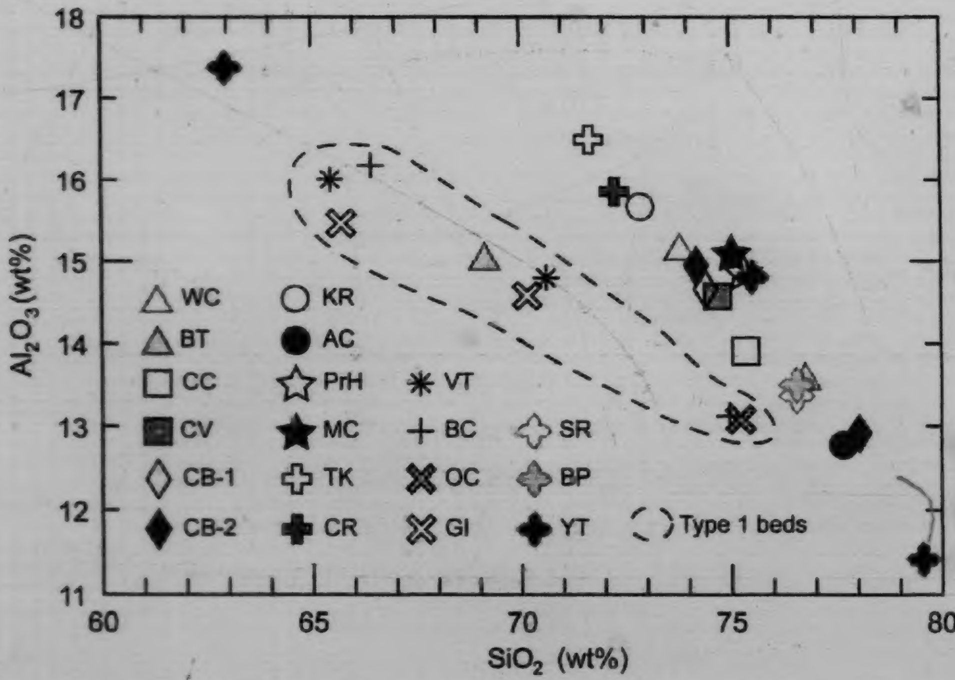


Figure 4.6: Average major element compositions of tephra beds at Chester Bluff plotted on an Al-Si plot. Averages from tables 1,2 and 3.

be dominated by hornblende and some orthopyroxene. Preido Hill, TK, CR and, to a lesser extent, MC, have a low percentage of phenocrysts (<20%) and contain a population of distinctively thick-walled pumice and glass shards (Fig. 4.7f,g,i). MC and, in particular, TK, pumice is rich in microcrysts.

There are four Type I tephra beds present at Chester Bluff. Three are known from elsewhere in Yukon and Alaska: VT, Old Crow, and GI, and one is newly characterized, BC. All have similar glass morphology of low vesicular pumice, bubble-walled and tri-cuspate shards. These morphologies are particularly striking in the Old Crow and GI tephra beds (Fig. 4.7l). BC and VT are richer in frothy pumice and have fewer bubble-walled and tri-cuspate shards (Fig. 4.7j,k). Rare phenocrysts (< 20%) are dominated by

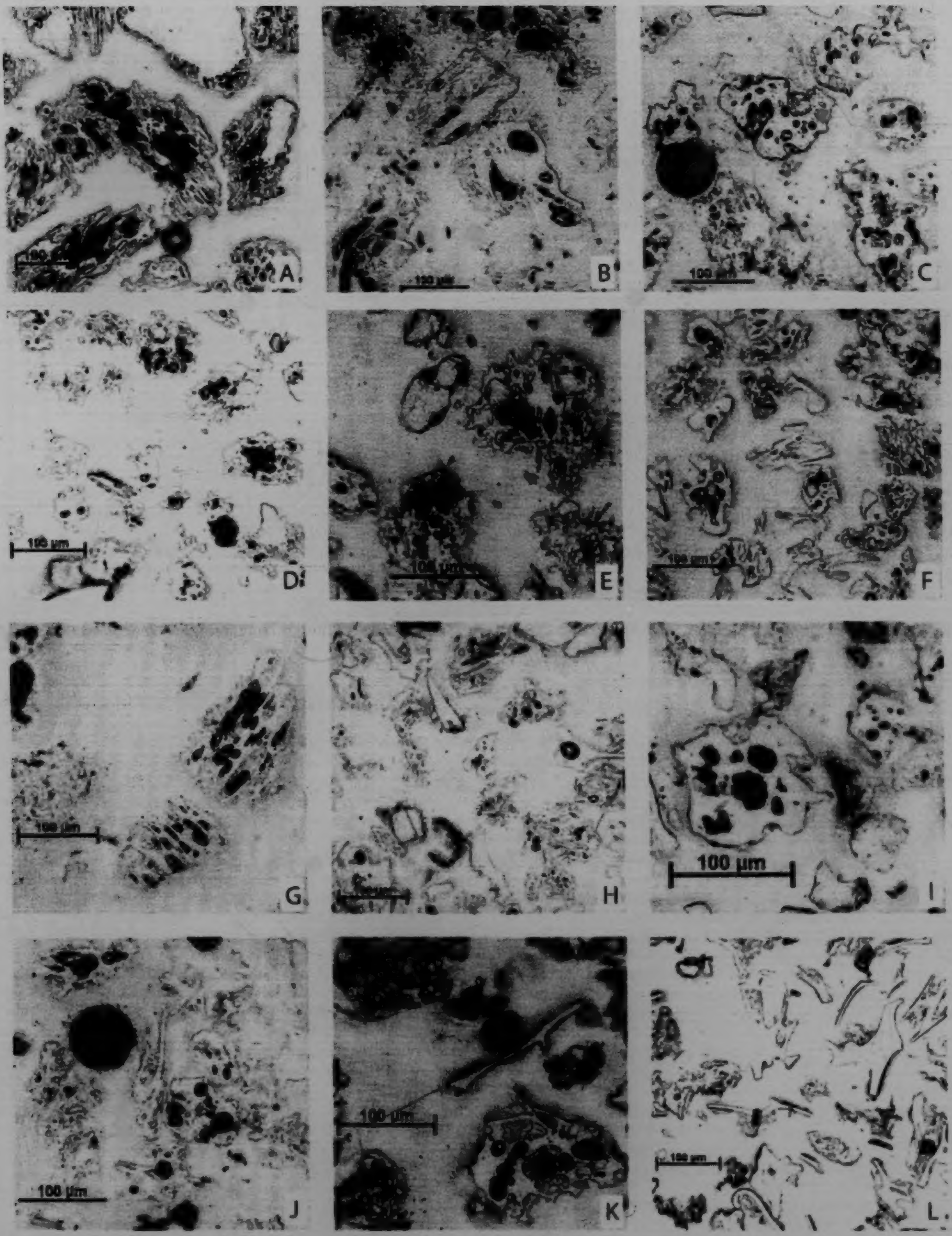


Figure 4.7: Examples of glass morphology for several beds found at Chester Bluff. Examples of Type II glass morphology: (A) BT, (B) CB$_1$, (C) CB$_2$, (D) KR, (E) WC, (F) CR, (G) PrH, (I) TK; (H) SR displays a Type I like morphology, but it has inflated frothy pumice as well. Examples of Type I morphology: (J) VT, (K) BC, (L) Old Crow. Also note the chunky and irregular appearance of pumice in TK and CB$_2$, due to large amounts of microcrysts within the glass.

ortho- and clino-pyroxenes, and very rarely contain hornblende. GI and BC both contain brown glass. BC phenocrysts are dominated by euhedral orthopyroxene grains, likely hypersthene, most of which contain abundant melt inclusions.

SR, BP and YT cannot easily be classified using the Type I/II criteria of Preece et al. (1992). SR and BP have glass morphology that contains bubble-walled and tri-cuspate shards, but also frothy inflated pumice (Fig. 4.7h). They are contaminated with detrital material, making it difficult to determine their phenocryst populations. Trace element geochemistry will be required to fully characterize these two beds. YT appears to have a low percentage of phenocrysts. Glass morphology is predominantly chunky glass shards and pumice, with rare frothy pumice. Glass is commonly brown and rich in microcrysts. Phenocrysts are dominated by orthopyroxenes, hornblende is present but rare.

4.5.2. Geochemistry and correlation of Chester Bluff tephra beds

Major element geochemistry was determined on all tephra beds (Table 4.2, 4.3 and 4.4) and Fe-Ti oxides and some magnetites were characterized for GI, CR, BT, CC, CB_1, CB_2, Preido Hill and SR (Table 4.5). All the tephra beds at Chester Bluffs are rhyolitic, although several have populations that are dacitic and one bed (YT) has an andesitic population (Fig. 4.8a). All tend to fall on the broad calc-alkaline type of trend (Fig. 4.8b). This broad trend can be further subdivided into three individual trends; low-K, calc-alkaline in the strict sense, and high-K (Blatt and Tracy, 2001). Some Chester Bluff tephra beds, particularly Type I beds, plot near the low- K trend (Fig. 4.8c). This classification of the tephra beds is reflected in their phenocrysts populations, although there is overlap. High-K rhyolitic/dacitic volcanic rocks commonly contain plagioclase,

Table 4.2: Average major element glass composition of Type II Chester Bluff tephra beds.

	BT				CC		CV		CB_1		CB_2				KR	
	pop. 1		pop. 2								pop. 1		pop. 2			
SiO_2	76.76	(0.44)	69.14	(0.44)	75.36	(0.52)	74.71	(0.36)	74.42	(0.44)	74.19	(0.41)	78.03	(1.02)	72.92	(0.44)
TiO_2	0.14	(0.07)	0.38	(0.06)	0.25	(0.05)	0.22	(0.03)	0.22	(0.06)	0.23	(0.07)	0.22	(0.06)	0.21	(0.06)
Al_2O_3	13.55	(0.30)	15.00	(0.32)	13.91	(0.21)	14.57	(0.22)	14.66	(0.29)	14.94	(0.44)	12.92	(0.50)	15.66	(0.25)
FeO_t	0.97	(0.08)	3.22	(0.14)	1.36	(0.15)	1.33	(0.08)	1.38	(0.09)	1.42	(0.07)	1.02	(0.23)	1.65	(0.09)
MnO	0.04	(0.03)	0.06	(0.04)	0.04	(0.03)	0.06	(0.03)	0.04	(0.03)	0.05	(0.03)	0.04	(0.03)	0.05	(0.03)
MgO	0.30	(0.03)	2.15	(0.37)	0.36	(0.04)	0.43	(0.05)	0.43	(0.04)	0.43	(0.03)	0.22	(0.06)	0.58	(0.05)
CaO	1.39	(0.12)	3.69	(0.17)	1.71	(0.14)	1.80	(0.09)	1.86	(0.11)	1.87	(0.08)	1.24	(0.24)	2.45	(0.12)
Na2O	3.66	(0.16)	3.77	(0.11)	3.96	(0.14)	4.12	(0.13)	4.07	(0.17)	3.98	(0.14)	2.58	(0.67)	4.22	(0.25)
K2O	3.14	(0.13)	2.57	(0.13)	3.02	(0.08)	2.73	(0.16)	2.87	(0.10)	2.85	(0.11)	3.67	(0.34)	2.22	(0.08)
Cl	0.05	(0.03)	0.04	(0.03)	0.03	(0.02)	0.04	(0.02)	0.04	(0.03)	0.05	(0.02)	0.04	(0.04)	0.04	(0.02)
H_20 diff	5.36	(1.23)	2.54	(0.65)	5.01	(0.96)	5.36	(1.92)	5.73	(1.36)	4.71	(1.37)	6.32	(1.28)	5.97	(1.60)
n	127		5		53		23		470		14		42		154	

	AC		WC		TK		CR		Preido Hill		MC		Preido Hill/MC	
SiO_2	77.65	(0.50)	73.80	(1.28)	71.66	(0.42)	72.26	(0.28)	75.31	(0.20)	75.03	(0.17)	75.20	(0.25)
TiO_2	0.17	(0.06)	0.19	(0.06)	0.21	(0.04)	0.23	(0.07)	0.10	(0.03)	0.12	(0.04)	0.11	(0.03)
Al_2O_3	12.78	(0.30)	15.12	(0.43)	16.49	(0.25)	15.85	(0.21)	14.85	(0.15)	15.09	(0.16)	14.87	(0.18)
FeO_t	1.16	(0.07)	1.38	(0.24)	1.56	(0.09)	1.80	(0.09)	0.88	(0.06)	0.90	(0.04)	0.92	(0.04)
MnO	0.05	(0.03)	0.04	(0.02)	0.07	(0.03)	0.08	(0.03)	0.08	(0.03)	0.08	(0.03)	0.07	(0.03)
MgO	0.26	(0.03)	0.50	(0.10)	0.53	(0.03)	0.60	(0.05)	0.27	(0.03)	0.27	(0.03)	0.26	(0.03)
CaO	1.46	(0.10)	2.04	(0.28)	2.35	(0.15)	2.11	(0.07)	1.37	(0.06)	1.47	(0.05)	1.45	(0.06)
Na2O	3.62	(0.27)	4.28	(0.19)	4.52	(0.24)	4.56	(0.19)	4.35	(0.18)	4.31	(0.13)	4.38	(0.20)
K2O	2.65	(0.12)	2.63	(0.13)	2.56	(0.11)	2.45	(0.06)	2.75	(0.09)	2.70	(0.10)	2.69	(0.08)
Cl	0.20	(0.04)	0.03	(0.02)	0.04	(0.02)	0.06	(0.03)	0.03	(0.02)	0.05	(0.02)	0.04	(0.02)
H_20 diff	6.33	(1.19)	5.22	(1.78)	6.10	(2.59)	5.32	(1.38)	5.94	(0.90)	5.88	(1.13)	6.32	(1.07)
n	62		55		40		313		47		26		439	

Table 4.3: Average major element glass composition of Type I Chester Bluff tephra beds.

	VT				GI				Old Crow		BC			
	pop. 1		pop. 2		pop. 1		pop. 2				pop. 1		pop. 2	
SiO_2	70.62	(0.49)	65.45	(1.41)	70.16	(0.8)	65.70	(1.35)	75.23	(0.32)	66.42	(0.25)	74.97	(0.30)
TiO_2	0.56	(0.05)	0.74	(0.05)	0.58	(0.08)	0.84	(0.14)	0.30	(0.05)	0.61	(0.05)	0.22	(0.02)
Al_2O_3	14.80	(0.17)	16.01	(0.24)	14.58	(0.25)	15.46	(0.27)	13.08	(0.19)	16.18	(0.11)	13.13	(0.02)
FeO_t	3.14	(0.20)	5.00	(0.64)	3.51	(0.31)	5.29	(0.66)	1.77	(0.09)	4.19	(0.12)	1.69	(0.11)
MnO	0.11	(0.02)	0.14	(0.03)	0.10	(0.04)	0.13	(0.04)	0.06	(0.03)	0.07	(0.03)	0.04	(0.01)
MgO	0.67	(0.09)	1.45	(0.24)	0.54	(0.11)	1.20	(0.28)	0.28	(0.03)	1.51	(0.07)	0.24	(0.01)
CaO	2.45	(0.16)	4.20	(0.36)	2.11	(0.29)	3.76	(0.62)	1.54	(0.07)	4.54	(0.23)	1.25	(0.02)
Na2O	4.56	(0.18)	4.68	(0.12)	4.42	(0.26)	4.40	(0.25)	3.75	(0.16)	4.47	(0.15)	3.56	(0.13)
K2O	2.93	(0.09)	2.20	(0.21)	3.80	(0.19)	3.06	(0.29)	3.70	(0.11)	1.97	(0.05)	4.42	(0.12)
Cl	0.17	(0.02)	0.15	(0.02)	0.20	(0.05)	0.16	(0.03)	0.28	(0.03)	0.04	(0.02)	0.49	(0.04)
H_20 diff	2.30	(1.68)	1.47	(0.21)	3.19	(1.88)	1.34	(1.59)	4.59	(1.49)	0.21	(0.89)	4.19	(0.24)
n	36		4		87		20		88		14		3	

Table 4.4: Average major element glass composition of unclassified Chester Bluff tephra beds

	YT						SR		BP	
	pop. 1		pop. 2		pop. 3					
SiO_2	79.55	(0.27)	75.51	(0.25)	62.96	(0.12)	76.56	(0.30)	76.56	(0.28)
TiO_2	0.31	(0.04)	0.12	(0.04)	0.82	(0.03)	0.16	(0.04)	0.14	(0.04)
Al_2O_3	11.41	(0.13)	14.81	(0.14)	17.38	(0.10)	13.37	(0.18)	13.50	(0.12)
FeO_t	0.93	(0.06)	0.90	(0.03)	5.41	(0.06)	1.27	(0.07)	1.17	(0.06)
MnO	0.03	(0.04)	0.09	(0.02)	0.08	(0.01)	0.07	(0.03)	0.07	(0.03)
MgO	0.13	(0.03)	0.26	(0.02)	2.03	(0.10)	0.34	(0.03)	0.33	(0.03)
CaO	0.44	(0.10)	1.30	(0.06)	4.92	(0.07)	1.88	(0.09)	1.86	(0.06)
Na2O	3.50	(0.08)	4.26	(0.19)	4.59	(0.20)	3.63	(0.15)	3.60	(0.17)
K2O	3.65	(0.18)	2.72	(0.06)	1.76	(0.08)	2.57	(0.09)	2.62	(0.08)
Cl	0.04	(0.02)	0.03	(0.02)	0.04	(0.02)	0.16	(0.02)	0.16	(0.02)
H_20 diff	4.87	(0.66)	5.69	(0.49)	1.27	(0.88)	5.82	(0.96)	5.98	(1.22)
n	5		7		5		164		43	

Table 5: Major element data for Fe-Ti oxides and magnetites of selected tephra beds

	CR											
	titanomagnetite		ferrian ilmenite		ferrian ilmenite		ilmenite		ilmenite		ilmenite	
SiO_2	0.17	(0.07)	0.08	(0.03)	0.05	(0.00)	0.07	(0.05)	0.08	(0.01)	0.06	(0.01)
TiO_2	5.90	(0.30)	28.41	(0.76)	46.35	(0.70)	47.02	(0.63)	49.88	(1.21)	53.13	(0.44)
Al_2O_3	2.35	(0.62)	0.63	(0.06)	0.03	(0.01)	0.09	(0.03)	0.07	(0.04)	0.03	(0.01)
Cr_2O_3	0.17	(0.14)	0.03	(0.01)	0.01	(0.01)	0.01	(0.02)	0.01	(0.01)	0.01	(0.02)
V_2O_3	0.38	(0.17)	0.31	(0.07)	0.28	(0.01)	0.37	(0.30)	0.28	(0.00)	0.21	(0.02)
Fe_2O_3	53.34	(1.63)	45.54	(1.40)	12.19	(1.04)	11.07	(0.42)	5.17	(2.84)	0.04	(0.07)
FeO	33.79	(0.30)	22.95	(0.78)	40.25	(0.66)	38.21	(0.91)	40.41	(2.75)	44.90	(0.79)
MgO	1.54	(0.22)	1.41	(0.09)	0.04	(0.01)	1.99	(0.58)	2.19	(1.88)	0.24	(0.22)
MnO	0.41	(0.06)	0.18	(0.03)	1.41	(0.00)	0.60	(0.14)	1.01	(0.76)	2.01	(0.38)
Total	98.06	(1.91)	99.53	(0.58)	100.61	(0.29)	99.45	(1.42)	98.47	(1.88)	100.65	(0.77)
FeO_t	81.79	(1.50)	63.93	(0.61)	51.21	(0.28)	48.18	(0.84)	45.06	(0.84)	44.94	(0.85)
n	6		4		2		4		5		6	

	GI- reference sample						GI- Chester Bluff					
	titanomagnetite		titanomagnetite		titanomagnetite		titanomagnetite		titanomagnetite		titanomagnetite	
SiO_2	0.16	(0.02)	0.16	(0.02)	0.16	(0.04)	0.18	(0.07)	0.14	(0.03)	0.16	(0.03)
TiO_2	11.30	(0.32)	13.91	(0.50)	17.93	(0.41)	14.27	(0.46)	12.51	(0.00)	17.79	(0.37)
Al_2O_3	3.40	(0.13)	2.71	(0.10)	1.97	(0.06)	2.69	(0.08)	3.05	(0.03)	2.00	(0.12)
Cr_2O_3	0.14	(0.04)	0.09	(0.06)	0.03	(0.02)	0.05	(0.02)	0.11	(0.04)	0.05	(0.08)
V_2O_3	0.78	(0.05)	0.62	(0.02)	0.43	(0.02)	0.61	(0.03)	0.65	(0.00)	0.46	(0.17)
Fe_2O_3	43.89	(0.76)	39.08	(1.17)	32.10	(1.28)	41.31	(0.03)	37.67	(1.03)	32.03	(0.84)
FeO	37.01	(0.50)	39.57	(0.59)	44.47	(0.48)	37.85	(0.02)	39.73	(0.64)	44.18	(0.49)
MgO	3.30	(0.20)	2.88	(0.10)	2.00	(0.08)	2.81	(0.11)	3.16	(0.04)	2.03	(0.17)
MnO	0.42	(0.02)	0.52	(0.03)	0.65	(0.02)	0.53	(0.01)	0.47	(0.01)	0.65	(0.06)
Total	100.41	(0.70)	99.56	(1.03)	99.74	(1.30)	99.26	(0.06)	98.54	(1.49)	99.34	(0.89)
FeO_t	76.50	(0.57)	74.74	(0.93)	73.35	(1.25)	73.63	(1.15)	75.03	(0.04)	73.00	(0.85)
n	7		6		21		2		9		25	

Table 5: Major element data for Fe-Ti oxides of selected tephra beds

	Preido Hill/MC						Preido Hill							
	magnetite		titanomagnetite		titanomagnetite		magnetite		titanomagnetite		titanomagnetite		titanomagnetite	
SiO_2	0.16	(0.13)	0.09	(0.01)	0.13	(0.02)	0.11	(0.01)	0.13	(0.07)	0.11	(0.02)	0.10	(0.00)
TiO_2	0.29	(0.17)	2.38	(0.23)	3.67	(0.14)	0.54	(0.32)	2.25	(0.36)	3.77	(0.02)	4.35	(0.65)
Al_2O_3	0.21	(0.13)	0.54	(0.02)	2.43	(0.49)	0.13	(0.02)	1.12	(0.24)	2.50	(0.08)	4.15	(0.15)
Cr_2O_3	0.08	(0.06)	0.13	(0.02)	0.01	(0.04)	0.10	(0.00)	0.10	(0.04)	0.01	(0.01)	0.00	(0.00)
V_2O_3	0.37	(0.10)	0.29	(0.01)	0.10	(0.09)	0.34	(0.00)	0.57	(0.07)	0.08	(0.01)	0.09	(0.00)
Fe_2O_3	67.43	(0.86)	63.85	(0.31)	58.86	(0.42)	67.02	(0.68)	62.62	(1.11)	59.13	(0.43)	55.88	(0.98)
FeO	31.54	(0.33)	31.21	(0.41)	32.98	(0.38)	31.59	(0.24)	32.82	(0.73)	33.15	(0.20)	33.51	(0.86)
MgO	0.01	(0.01)	0.98	(0.04)	0.88	(0.18)	0.01	(0.01)	0.28	(0.22)	0.93	(0.05)	1.04	(0.18)
MnO	0.07	(0.04)	0.83	(0.04)	0.60	(0.12)	0.08	(0.02)	0.32	(0.04)	0.63	(0.01)	0.79	(0.06)
Total	100.16	(1.20)	100.31	(1.04)	99.66	(0.89)	99.93	(0.09)	100.21	(0.28)	100.31	(0.49)	99.92	(0.26)
FeO_t	92.22	(1.08)	88.67	(0.69)	85.94	(0.67)	91.90	(0.37)	89.17	(0.60)	86.37	(0.57)	83.80	(0.02)
n	5		2		15		2		3		5		2	

	CC				BT				CB-1		SR	
	titanomagnetite		ferrian ilmenite		titanomagnetite		ferrian ilmenite		ferrian ilmenite		titanomagnetite	
SiO_2	0.08	(0.02)	0.06	(0.07)	0.07	(0.02)	0.06	(0.08)	0.05	(0.02)	0.16	(0.03)
TiO_2	5.82	(0.12)	29.04	(0.58)	4.51	(0.19)	27.45	(0.29)	28.87	(0.80)	5.18	(0.13)
Al_2O_3	2.58	(0.25)	0.52	(0.16)	2.52	(0.05)	0.48	(0.01)	0.54	(0.06)	2.09	(0.12)
Cr_2O_3	0.20	(0.03)	0.08	(0.03)	0.18	(0.05)	0.07	(0.04)	0.09	(0.04)	0.02	(0.02)
V_2O_3	0.52	(0.03)	0.40	(0.02)	0.50	(0.03)	0.38	(0.04)	0.32	(0.04)	0.43	(0.04)
Fe_2O_3	54.61	(0.15)	42.93	(1.56)	56.69	(1.17)	46.90	(1.52)	43.36	(1.37)	55.53	(0.46)
FeO	33.36	(0.32)	23.11	(0.50)	32.92	(0.48)	22.46	(0.28)	23.08	(0.64)	33.40	(0.37)
MgO	2.05	(0.30)	1.62	(0.17)	1.45	(0.10)	1.19	(0.06)	1.54	(0.10)	1.35	(0.10)
MnO	0.38	(0.04)	0.20	(0.03)	0.39	(0.02)	0.18	(0.02)	0.19	(0.02)	0.57	(0.03)
Total	99.61	(0.18)	97.95	(1.24)	99.24	(1.40)	99.17	(1.38)	98.05	(1.43)	98.73	(0.67)
FeO_t	82.51	(0.46)	61.74	(1.23)	83.93	(1.45)	64.66	(1.32)	62.10	(1.10)	83.37	(0.60)
n	3		12		5		13		11		11	

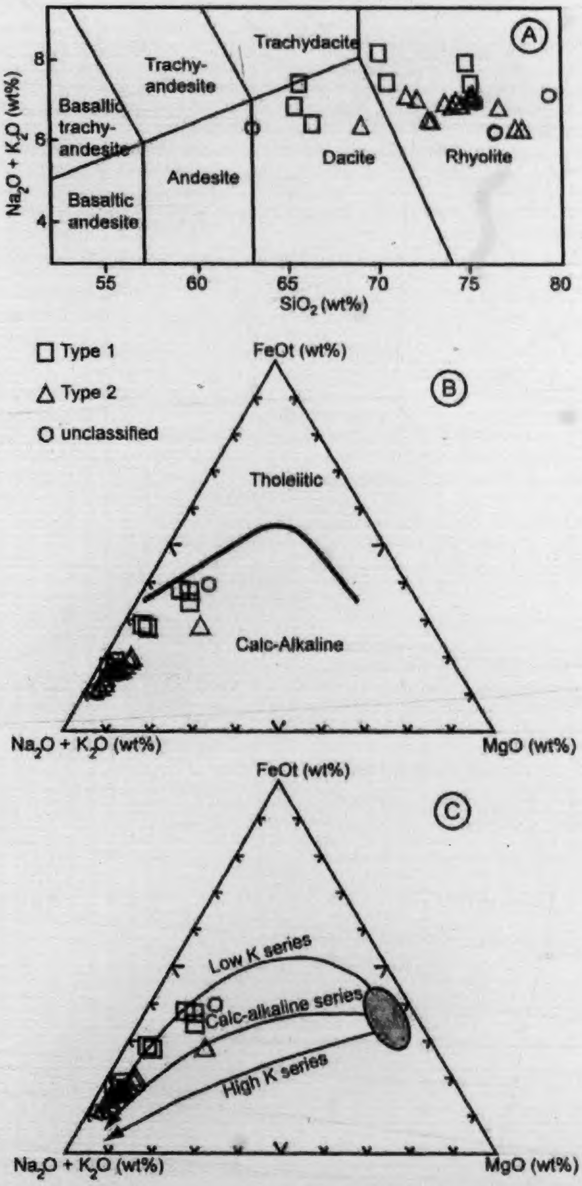


Figure 4.8: Average major element compositions of Type I, II and unclassified tephra beds plotted on the International Union of Geological Sciences (IUGS) total alkali-silica (TAS) and AFM diagrams. (A) TAS classification of tephra beds at Chester Bluff (adapted from Le Bas et al., 1983). (B) A schematic AFM diagram showing that all the tephra beds fall within the broad calc-alkaline trend. (C) A schematic AFM diagram that depicts the evolution of three ideal melts as they fractionate from primary basalt to rhyolite (adapted from Blatt and Tracy, 2001). Although a schematic diagram, it shows the tendency of Chester Bluff tephra beds to follow the calc-alkaline to low-K series trends.

hornblende, biotite, sanidine and quartz, rarely fayalite. Both Type I and II beds typically do not contain sanidine and thus do not fit well into this series. Calc-alkaline rhyolitic/dacitic volcanic rocks commonly contain plagioclase, hornblende, biotite, orthopyroxene, quartz and rarely augite or sanidine. This suite is very similar in character to Type II beds. Low-K rhyolitic/dacitic volcanic rocks commonly contain plagioclase, augite, hypersthene, quartz, Fe-Ti oxides and rarely sanidine or fayalite. This suite is more characteristic of Type I beds (Blatt and Tracy, 2001).

Type II beds are rhyolitic and have similar glass chemistry (Fig. 4.9a). TK and CR are easy to distinguish by their lower Si content and are distinguished from each other by the higher Al content of TK (Fig 4.9b). WC is distinguished from KR by its higher Si content, greater spread in Si values and lower Al content. WC and KR are also clearly separated by their K contents (Fig. 4.9b,c).

CC, CV and CB_1 are extremely similar and overlap with the lower Si population of CB_2 (Fig. 4.9d). CB_1 and CB_2 probably erupted from the same source but are easy to distinguish geochemically by the higher Si population that dominates CB_2. CC and CV fall on the same trend as CB_1 and CB_2, but are distinguished by the higher Al and lower K content of CV (Fig. 4.9d,e), and the higher Si content of CC in comparison to CB_1 (Fig. 4.9d). Fe-Ti oxides of CC and CB_1 suggest the close relationship between the tephra beds. They are virtually indistinguishable except a distinct magnetite population absent in CB_1 and their V contents (Fig. 4.10c,d).

Preido Hill and MC are difficult to distinguish geochemically. MC has a slightly lower Si content and higher Al content than Preido Hill (Fig. 4.9f). At Sites A and B, tephra samples correlated to Preido Hill and MC tend to encompass both populations, not

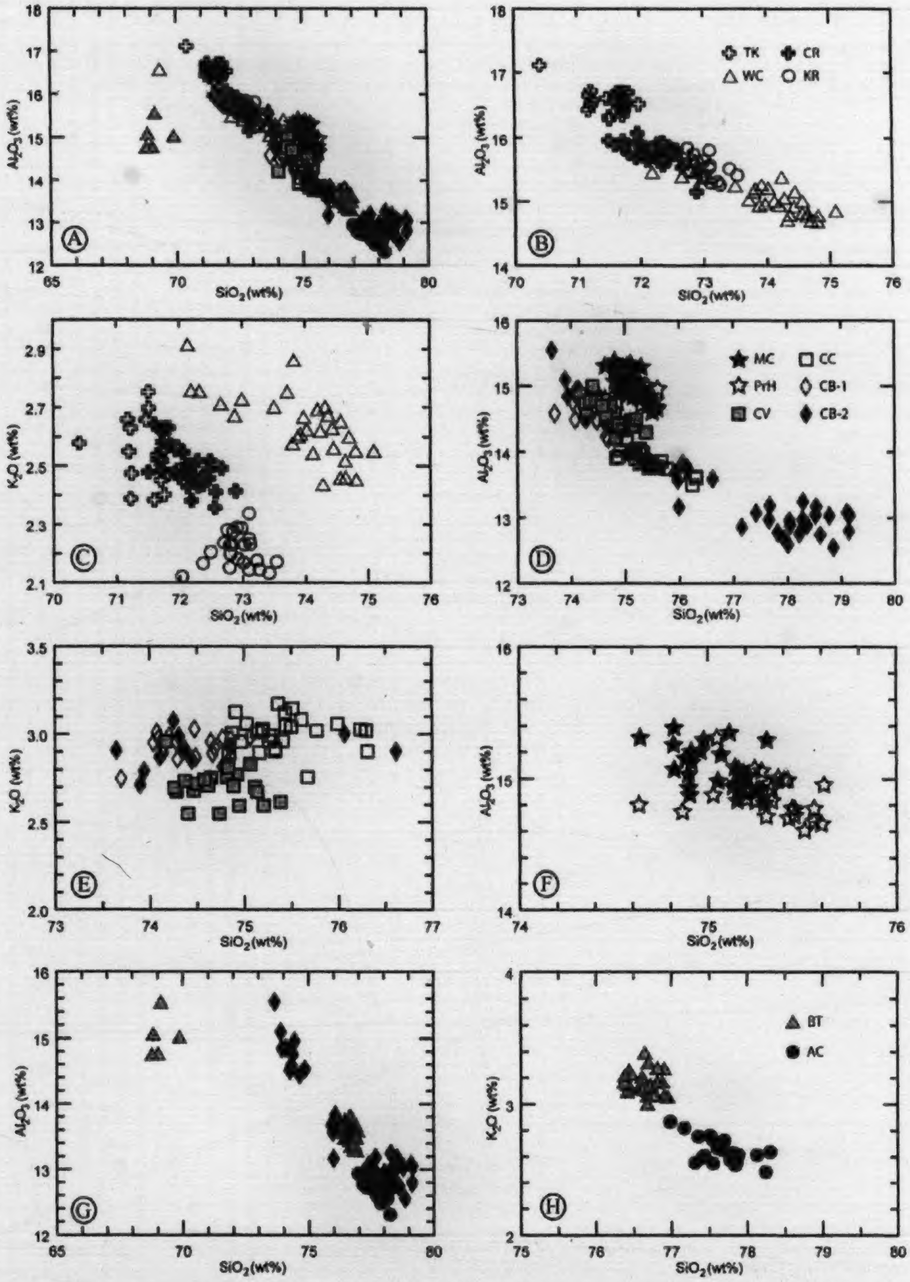


Figure 4.9: Major element geochemical plots of Type II tephra beds. The same symbol represents the same tephra bed for all plots. (A) all Type II tephra beds from Chester Bluff; (B) and (C) the lower Si tephra beds are easy to distinguish from one another by their distinct Al and K contents; (D) CB$_2$ stands out due to its bimodal population, PrH and MC are easy to distinguish with their higher Al contents; (E) CB$_1$, CB$_2$, CC and CV are easiest to distinguish by their K contents; (F) PrH and MC are very similar, but MC is consistently slightly lower in Si and higher in Al; (G) and (H) geochemistry of the high Si beds, CB$_2$ present in G.

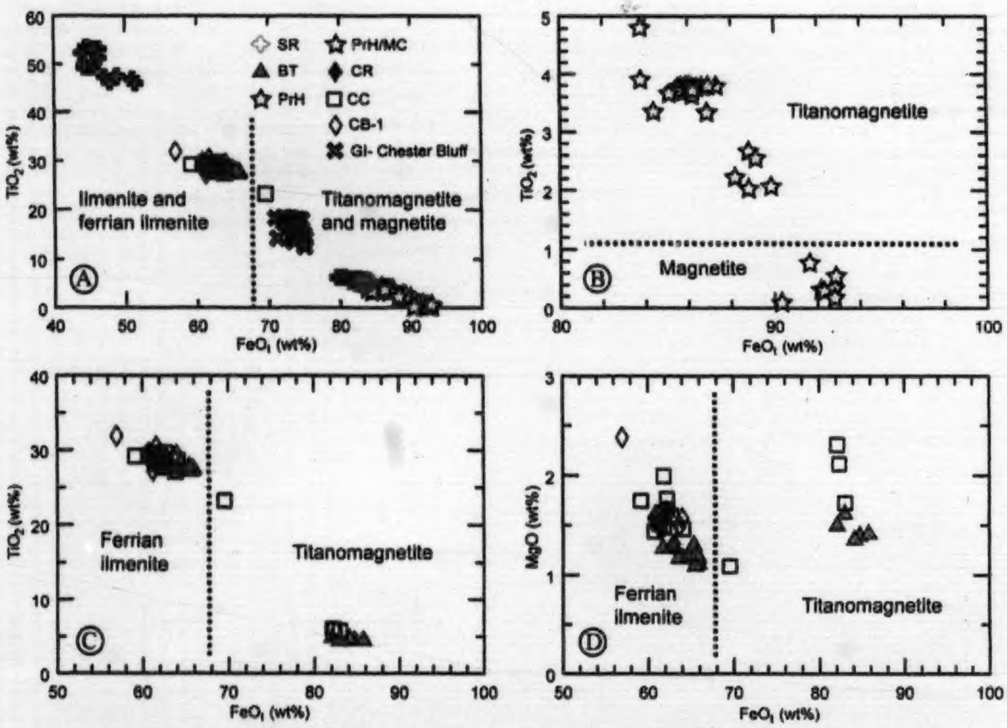


Figure 4.10: (A) Fe-Ti oxide plot of selected tephra beds at Chester Bluff; (B) PrH from Site C plotted against PrH/MC from Site A are virtually indistinguishable; (C) CB_1 is distinguishable from BT and CC by the lack of titanomagnetites; (D) BT and CC are best distinguished by MgO.

unexpected considering the extensive reworking of the tephra beds at those locales. Fe-Ti oxide data of a mixed sample from Site A_2 was compared to a Preido Hill sample from Site C and they are not distinguishable (Fig 4.10b). It is probable that Preido Hill and MC are from the same source and erupted close in time. Preido Hill was correlated to a reference sample from the Klondike through glass geochemistry, using a split from the original sample that was analyzed and reported by Preece et al., (2000).

BT and AC are distinguishable from one another by their Si, Al and K contents in their glass shards (Fig. 4.9g,h). BT contains a low Si population that is not entirely on trend for what would be expected of a Type II bed (Fig. 4.6, 4.9g). It is possible a small contaminant population is present in BT, although the closely clustered data on glass chemistry and glass morphology, which does not distinguish the glass shards these data points were collected from, suggest otherwise. Glass chemistry and stratigraphy indicate BT is a distinct bed from CC and CB_1, but the Fe-Ti oxide data suggests they are closely related, in particular to CC (Fig. 4.10c,d).

Type I beds present at Chester Bluff have compositions that range from rhyolitic to dacitic. The Old Crow tephra has little variation in its glass chemistry relative to most other tephra beds, forming a discrete plot on bivariate graphs (Fig. 4.11). VT, GI and BC have two dominant populations, one rhyolitic and the other dacitic. All four beds follow a very similar trend with their Si and Al contents (Fig. 4.11a), but are clearly separated by their K (Fig. 4.11b). The correlation of Chester Bluff samples to Old Crow, VT and GI is by major element glass chemistry. The unknown samples were analyzed with reference samples of Old Crow, VT and GI. Additional Fe-Ti oxide data was collected for GI as past analyses of the glass have shown a low Si population in the Chester Bluff sample that was not originally seen in the Fairbanks sample (Froese et al. 2003). Subsequent analyses have addressed this problem and the Fe-Ti oxide data supports the correlation (Fig. 4.12).

SR and BP are very similar to one another geochemically, but display subtle variation between their Fe and Al contents (Fig. 4.13e,f). When plotted with selected Type I and II beds they tend to follow Type II trends. Although this is not as obvious at high Si contents (Fig. 4.13 a,b), it is clearly seen on Al-Fe or K-Ti bivariate plots (Fig. 4.13 c,d). This is in contrast to their glass morphology that tends towards Type I characteristics (Fig. 4.7h).

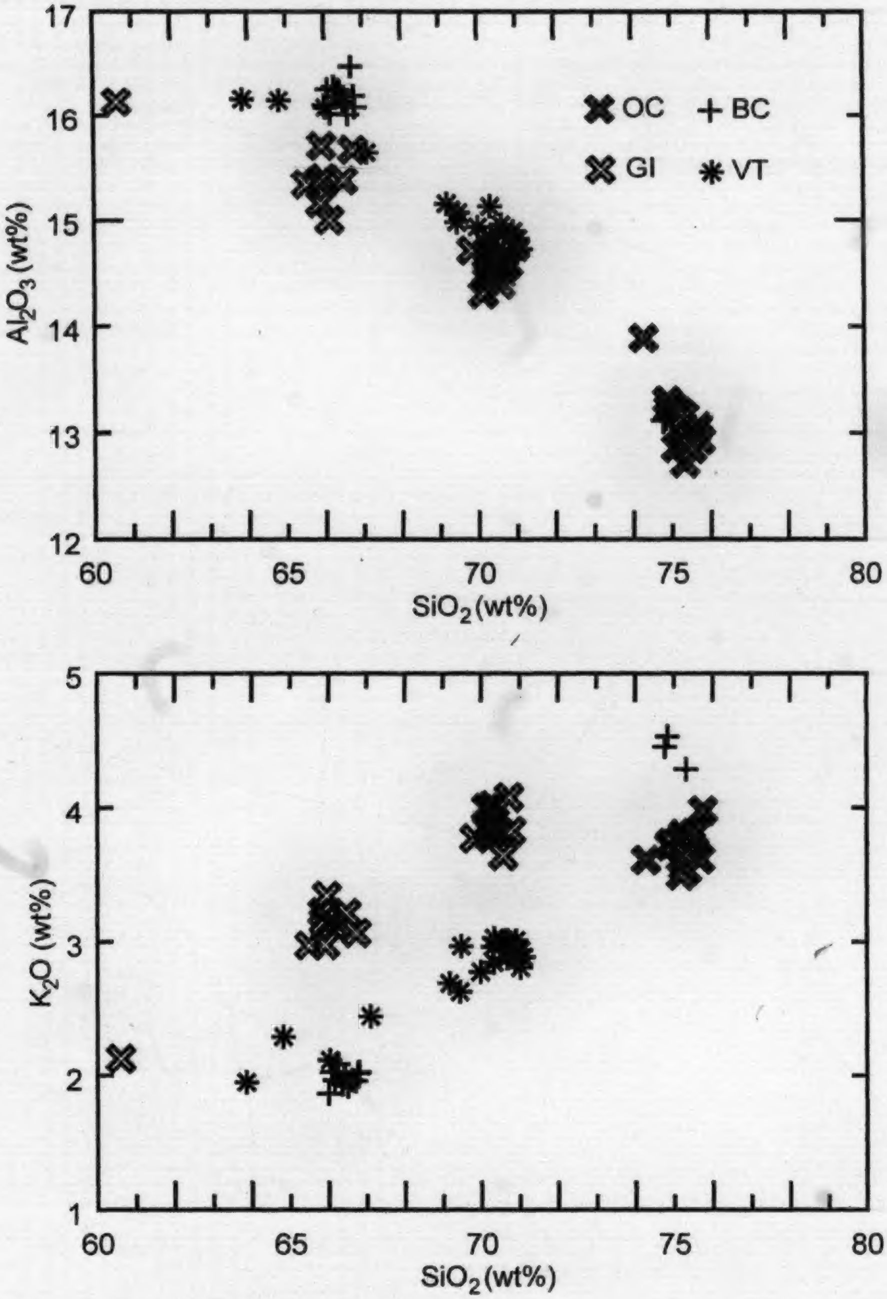


Figure 4.11: Type I tephra beds plotted on Si-Al and Si-K plots. Note how BC tends to have steeper slopes than the other beds.

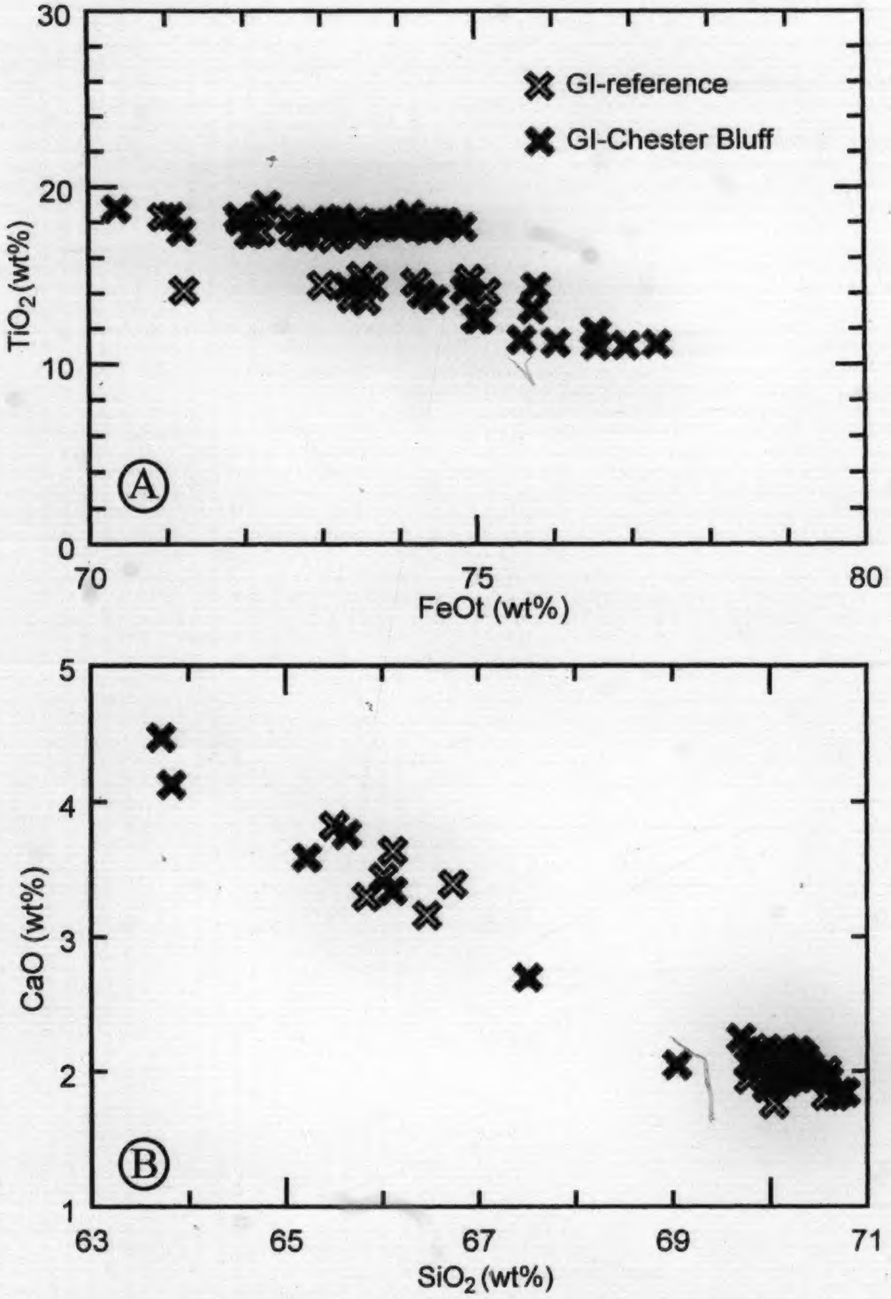


Figure 4.12: (A) Titanomagnetite data and (B) major element geochemistry clearly show the correlation between the GI reference material from Fairbanks and the GI tephra at Chester Bluff.

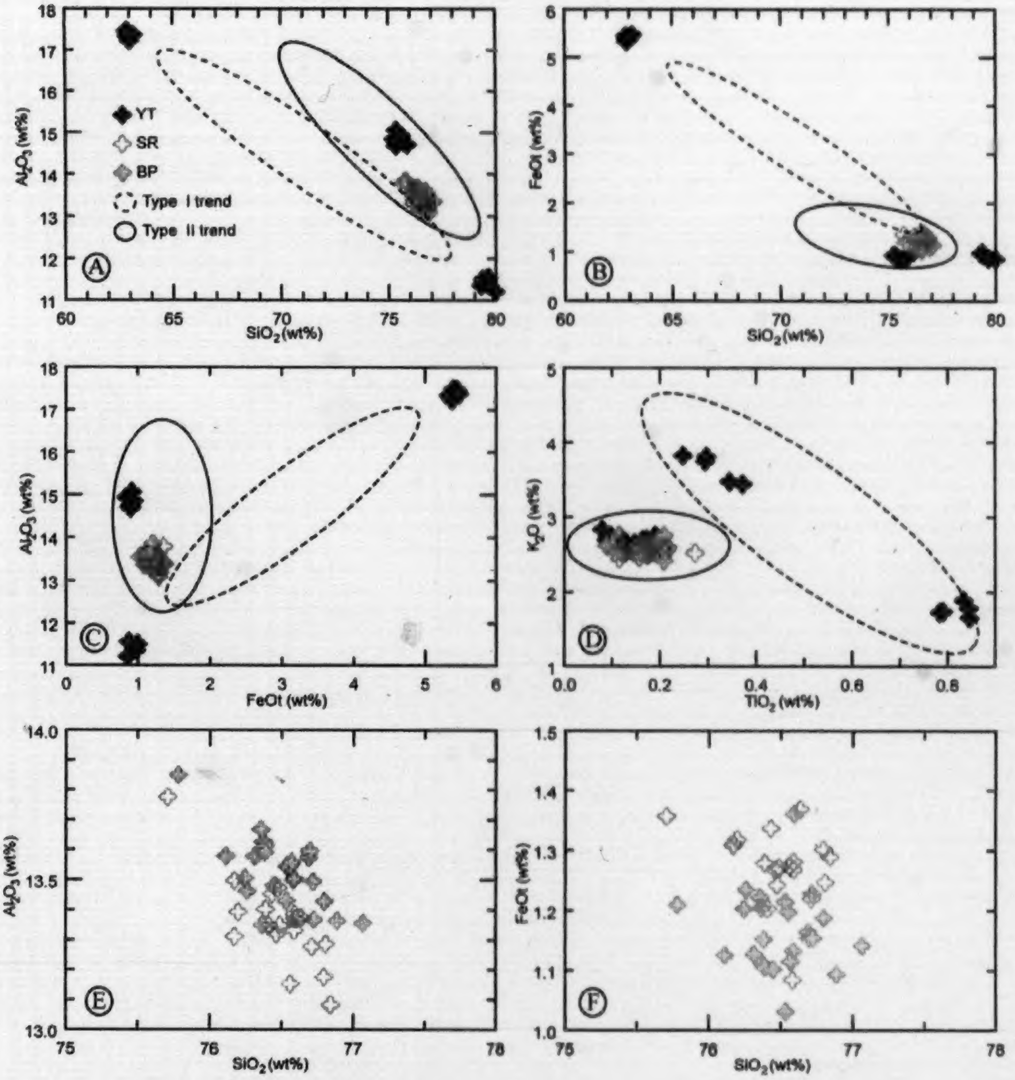


Figure 4.13: YT, SR and BP plotted with generalized Type I and II fields. (A) Al-Si plot; (B) Fe-Si plot; (C) Al-Fe plot; (D) K-Ti plot; (E) close up of SR and BP on a Al-Si plot; (F) close up of SR and BP on a Fe-Si plot.

YT has three distinct geochemical populations that do not necessarily relate to one another. The andesitic population and the highest Si population tend to follow trends more expected of Type I beds (Fig 4.13a,b,c,d). The third population tends to plot along Type II trends (Fig. 4.13c,d).

4.6. Discussion

4.6.1. Geochronology

Sediments at Chester Bluff are normally magnetized, thus providing a maximum age of 780 ka (Froese et al. 2003). Wood macrofossils from the upper organic unit at Site A (~59 m) and the upper organic unit at Site B (~40 m) were AMS ^{14}C dated to 47 300 ± 1500 ^{14}C yr B.P. and 40 600 ± 1900 ^{14}C yr B.P., respectively (Froese et al. 2003). However, the apparent age inversion, the inferred interglacial nature of the organic unit at Site A, and the probable presence of Old Crow tephra above the organic horizons, collectively suggest that the ages should be regarded as not finite rather than a close minimum age for the sediments at Chester Bluff.

Three of the tephra beds at Chester Bluff have been dated. The oldest is the GI tephra, which has a diameter-corrected glass fission-track age of 560 000 ± 80 000 yrs, based on a weighted mean of two separate determinations (Sandhu and Westgate, 1995; Froese et al. 2003). This constrains the basal age of the loess to between 780 000 and 560 000 ± 80 000 yrs. Considering the presence of the interglacial unit within the outburst flood sequences can reduce this range of potential ages. The first interglacial in the Bruhnes chron is marine isotope stage (MIS) 19 (Shackleton et al., 1990), indicating the basal age of the loess postdates the end of MIS 19, at approximately 700 000 yrs.

The Old Crow tephra has a weighted mean glass fission-track age of 140 000 ± 10 000 yrs, based on four separate determinations (Westgate et. al, 1990). Berger (2003) confirmed the glass fission-track age with thermoluminescence (TL) ages on silt samples bracketing Old Crow tephra, and by combining his results with the glass fission-track ages produced a weighted mean age of 142 000 ± 6600 yrs. If the projection of the Old Crow tephra above BT at Site B is correct, then the uppermost sediments at Sites A and B are likely older than 142 000 ± 6600 yrs. The organic-rich loess above Old Crow at Sites B and C could possibly represent MIS 5e but requires further study.

The projection of Old Crow above CB at Site B suggests the interglacial unit associated with CB is MIS 7 or older in age. Preido Hill tephra is likely older than MIS 7. The presence of at least one major organic horizon, representing an interstadial or interglacial, between the interglacial unit associated with CB and Preido Hill suggests Preido Hill may be significantly older, i.e. middle-Middle Pleistocene.

At Site C, the VT tephra is present within 1 m of the local surface. The VT tephra has been dated by glass fission-track to 130 000 ± 30 000 yrs, based on a single determination (Sandhu et al. 2001). Berger (2003) obtained a weighted mean age for VT of 77 800 ± 4100 yrs with three bracketing TL ages. These ages are not mutually exclusive with the glass fission-track age within 2 σ error of the TL age. However, as this tephra has never been found in relation to the last interglacial and is well above the Old Crow tephra, details discussed below, the TL age is considered the minimum age for the bluffs (Fig. 4.14).

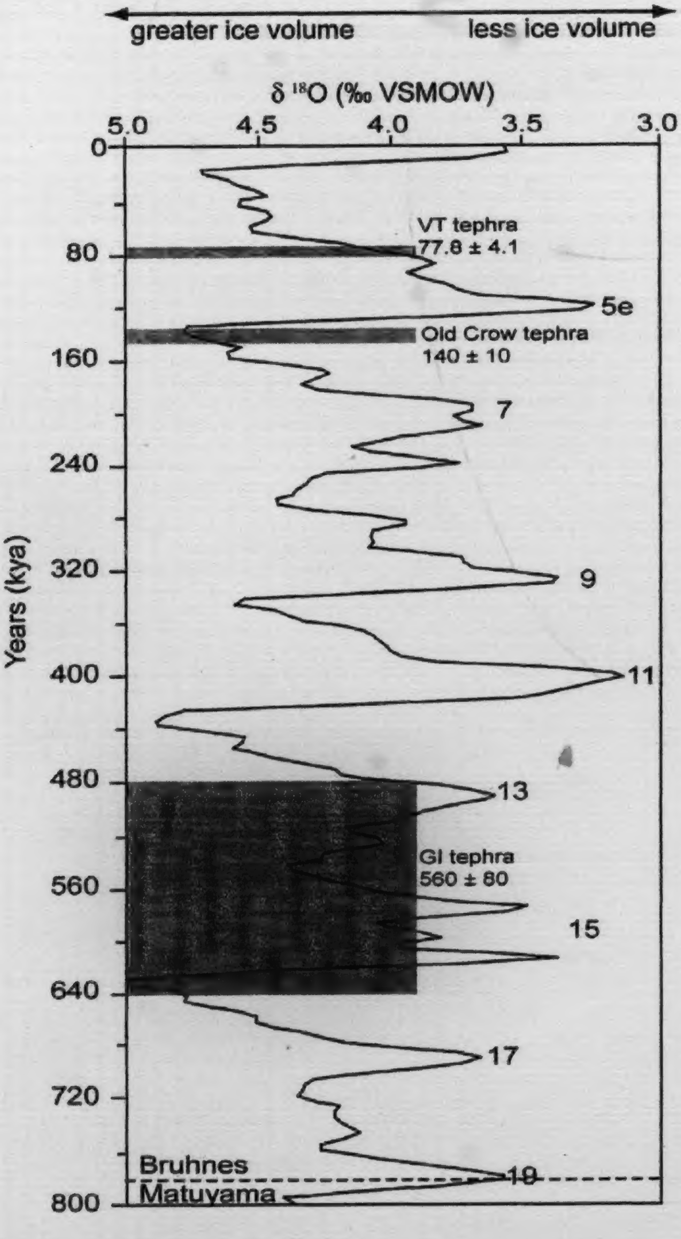


Figure 4.14: Chronology of Chester Bluff in relation to MIS stages and the paleomagnetic record. The numbers represent main isotope stages from 5 to 19. The bars representing VT, Old Crow and GI cover 1σ their possible distribution. Isotopic curve from ODP site 849 (Mix et al, 1995).

4.6.2. Regional Correlations

The tephrostratigraphic record at Chester Bluff, which includes the previously identified VT, Old Crow, Preido Hill and GI tephra beds, should help resolve earlier difficulties in the correlation of the Klondike and Fairbanks records.

VT was originally described in the Fairbanks area within the uppermost Gold Hill loess ~ 5 m above the Old Crow tephra at the Halfway House locality (Preece et al., 1999). Berger (2003) revisited the original site and reported VT at two additional sites. At all three sites VT is deposited in massive inorganic loess, although it is ~25 cm below a paleosol in one section. Except for one anomalous age, TL samples at all three sites are conformable and support the age estimate of 77.8 ± 4 ka. Initially identified as the Jackson Hill tephra in the Klondike (Sandhu et al., 2001), VT is deposited in massive inorganic loess that unconformably overlies the Pliocene White Channel gravels (Sandhu et al., 2001; Westgate et al., 2003b). Schaffer (2002) reported a tephra with very similar major element geochemistry about 2.5 m above Old Crow at a site near Tok, Alaska. Although a split of this sample was not available to geochemically confirm the tentative correlation, the similar stratigraphic relation and published geochemical values point to a probable correlation. Confirmation of these correlations would elevate VT to the role of a valuable marker horizon for the early Wisconsinan in Yukon and Alaska.

Old Crow is the most regionally extensive tephrostratigraphic marker in Yukon and Alaska (e.g. Westgate et al., 1985; Hamilton, 1993). This tephra is typically used to identify last interglacial sediments, which commonly host well-preserved sub-fossil forest material and other extensive plant macrofossil and pollen records. Old Crow typically underlies the organics associated with the last interglacial, but is locally reworked into the organic-rich sediments (e.g. Péwé, 1955; Schweger and Matthews, 1985; Begét et al., 1991; Elias, 2001; McDowell and Edwards, 2001; Muhs et al., 2001; Berger, 2003; Matheus et al., 2003). Further study is required at Chester Bluff to confirm if the organic-rich loess above Old Crow represents MIS 5e.

Preido Hill has only been found in the Klondike, where it was originally collected and described at the now buried MIBEN and MIBEN 2 placer mining cuts (Preece et al., 2000). The tephra was thick (18-31 cm) and approximately 3 m below a 30-60 cm thick organic horizon comprised of felted peat, sticks and rooted tree trunks. The tephra itself was deposited in massive silt about 5 m below the Last Chance Creek tephra, the only other tephra found at this locale (Preece et al., 2000). The stratigraphic context of Preido Hill in the Klondike is similar to Chester Bluff, but the complexity of the perennially frozen Klondike placer sections makes any definitive correlation difficult.

Prior to my study of Chester Bluff, GI had only been identified at a road cut on the campus of University of Alaska, Fairbanks (Preece et al., 1999). At the Fairbanks locale it is described as a pink discontinuous bed up to 10 cm thick in massive loess. This units is interpreted to be part of the Gold Hill loess sequence, but is not associated with any other tephra beds (Preece et al., 1999). At Chester Bluff GI is found within distinctly red loess that likely represents a Bm-horizon, suggesting an interglacial or interstadial setting.

4.7. Conclusion

Chester Bluff is an extensive series of exposures of middle to late Pleistocene loess, reworked loess, organic horizons and tephra beds. At least 15 previously unknown tephra beds, as well as four known beds, are present at Chester Bluff with good stratigraphic control. In particular, the presence of the regionally extensive Old Crow and VT tephra beds should facilitate correlation of distant sites in eastern Beringia. Several new tephra beds such as CB and CR, and one known bed, Preido Hill, contain thick-walled glass suitable for glass fission-track dating. Additional ages would be highly beneficial for the stratigraphy at Chester Bluff. The multiple organic horizons represent at least two interglacials and potentially several more. Chester Bluff likely contains the most extensive middle to late Pleistocene sedimentary record yet established for Yukon or Alaska, particularly with respect to the middle Pleistocene interglacials. This study can only be considered a reconnaissance of Chester Bluff, as only three of 20 bluffs were examined in detail. There is considerable potential for additional tephrochronological and paleoenvironmental work at this site.

4.8. References

Alloway B.V., Lowe, D.J., Barrell, D.J.A., Newnham, R.M., Almond, P.C., Augustinus, P.C., Bertler, N.A.N., Carter, L., Litchfield, N.J., McGlone, M.S., Shulmeister, J., Vandergoes, M.J., Williams, P.W., NZ-INTIMATE members, 2007. Towards a climate event stratigraphy for New Zealand over the past 30 000 years. Journal of Quaternary Science 20, 9-35.

Ager, T.A., 2003. Late Quaternary vegetation and climate history of the central Bering land bridge from St. Michael Island, western Alaska. Quaternary Research 60, 19-32.

Begét, J.E., Edwards, M.E., Hopkins, D.M., Keskinen. M, Kukla, G., 1991. Old Crow tephra at the Palisades of the Yukon, Alaska. Quaternary Research 35, 291-297.

Begét, J.E., 1996. Tephrochronology and paleoclimatology of the last interglacial glacial cycle recorded in Alaskan loess deposits. Quaternary International 34-36, 121-126.

Begét, J.E., Pedersen, T.F., Muhs, D., 2004. Terrestrial-marine correlation of the 24 kyr BP Dawson tephra: implications for dispersal and preservation of Alaskan tephra deposits. AGU Annual Fall Meeting, San Francisco, California, Fall Meet. Suppl. 85(47), Abstract V21C-02.

Berger, G.W., 2003. Luminescence chronology of late Pleistocene loess-paleosol and tephra sequences near Fairbanks, Alaska. Quaternary Research 60, 70-83.

Bigelow, N. 2003. Latest middle Pleistocene (Stage 7) interglacial. In: Froese, D. G, Matheus, P., Rasic, J. (Eds), Beringian environments and heritage of the upper Yukon River: a field workshop from Dawson City, Yukon through Yukon Charley Rivers National Preserve, Alaska. Beringian Heritage International Park, the National Parks Service and the International Arctic Research Center, University of Alaska, Fairbanks, pp. 50-53.

Blatt, H., Tracy, R.J., 2001. Petrology: Igneous, Sedimentary and Metamorphic. W.H. Freeman and Company, New York.

Boygle, J., 2004. Towards a Holocene tephrochronology for Sweden: geochemistry and correlation with the North Atlantic tephra stratigraphy. Journal of Quaternary Science 19, 103 - 109.

Campbell, J.D., 1952. The palaeobotany and stratigraphic sequence of the Pleistocene Klondike "muck deposits". Thesis, McGill University, Montreal.

Carter, C., Alloway, B., Shane, P., Westgate, J., 2004. Deep ocean record of major late Cenozoic rhyolitic eruptions from New Zealand. New Zealand Journal of Geology and Geophysics 47, 481-500.

Davies S.M., Branch , N.P., Lowe, J.J., Turney, C.S.M., 2002. Towards a European tephrochronological framework for Termination 1 and the Early Holocene. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences 360, 767 - 802.

Elias, S.A., 2001. Mutual climatic range reconstructions of seasonal temperatures based on Late Pleistocene fossil beetle assemblages in Eastern Beringia. Quaternary Science Reviews 20, 77-91.

Froese, D.G., Smith, D.G., Westgate, J.A. Ager, T.A., Preece, S.J., Sandhu, A., Enkin, R.J., Weber, F., 2003. Recurring middle Pleistocene outburst floods in east-central Alaska. Quaternary Research 60, 50-62.

Froese, D., Zazula, G.D. and Reyes, A.V., 2006. Seasonality of the late Pleistocene Dawson tephra and exceptional preservation of a buried vegetation surface in central Yukon Territory. Quaternary Science Reviews 25, 1542-1551.

Furbush, C.E., Schoephoster, D.B., 1977. Soil survey of the Goldstream-Nenana area, Alaska. National Cooperative Soil Survey, United States Department of Agriculture, p.44.

Guthrie, R.D., 1968. Paleoecology of the large mammal community in interior Alaska during the late Pleistocene. American Midland Naturalist 44, 346-63.

Gomez., B., Carter L., Trustrum N.A., Palmer, A.S., Roberts, A.P., 2004. El Niño–Southern Oscillation signal associated with middle Holocene climate change in intercorrelated terrestrial and marine sediment cores, North Island, New Zealand. Geology 32, 653-656.

Hopkins, D.M., Matthews, J.V., Schweger, C.E., and Young, S.B., (Eds), 1982. Paleoecology of Beringia. Academic Press, New York, NY.

Hamilton, T.D., 1993. The Old Crow Tephra: a stratigraphic marker for the last interglaciation in Alaska. U.S. Geological Survey Circular C 1086, 87.

Kunk, M.J., 1995. ^{40}Ar/^{39}Ar age-spectrum data for hornblende, plagioclase and biotite from tephras collected at Dan Creek and McCallum Creek, Alaska and in the Klondike placer district near Dawson, Yukon Territory, Canada. United States Geological Survey, Open File Report 95-217A.

Le Bas, M.J., Le Maitre, R.W., Streckeisen, A., and Zanellin, B., 1986. A chemical classification of volcanic rocks based on the total alkali-silica diagram: Journal of Petrology 27, 745–750.

Matheus, P., Begét, J., Mason, O., Gelvin-Reymiller, C., 2003. Late Pliocene to late Pleistocene environments preserved at the Palisades Site, central Yukon River, Alaska. Quaternary Research 60, 33-43.

McDowell P.F., Edwards M.E., 2001. Evidence of Quaternary climatic variations in a sequence of loess and related deposits at Birch Creek, Alaska: implications for the Stage 5 climatic chronology. Quaternary Science Reviews 20, 63-76.

Mix, A.C., N.G. Pisias, W. Rugh, J., Wilson, A. Morey, T. Hagelberg, 1995. Benthic foraminifer stable isotope record from Site 849 (0-5 Ma): Local and global climate changes. In: Pisias, N.G., Mayer, L.A., Janecek, T., Palmer-Julson, A., and van Andel, T. (Eds.), Proceedings of the Ocean Drilling Program, Scientific Results, Volume 138. Ocean Drilling Program, College Station, Texas, pp. 371-412.

Mortensen, A.K., Bigler, M., Grönvold, K., Steffensen, J.P., Johnsen, S.J., 2005. Volcanic ash layers from the Last Glacial Termination in the NGRIP ice core. Journal of Quaternary Science 20, 209-219.

Muhs, D.R., Ager, T.A., Beget, J.E., 2001. Vegetation and paleoclimate of the last interglacial period, central Alaska. Quaternary Science Reviews 20, 41-61

Mulligan, D., 2004. Soil survey of Greater Fairbanks area, Alaska. National Cooperative Soil Survey, United States Department of Agriculture, p.295.

Newnham R.M., Lowe D.J., McGlone M.S., Wilmshurst J.M., Higham T.F., 1998. The Kaharoa Tephra as a Critical Datum for Earliest Human Impact in Northern New Zealand. Journal of Archaeological Science 25, 533-544.

Péwé, T.L., 1955. Origin of the upland silt near Fairbanks, Alaska. Bulletin of the Geological Society of America 66, 699–724.

Pink, T., 2005. Soil survey of Fort Greely and Donnelly Training Area, Alaska. National Cooperative Soil Survey, United States Department of Agriculture, p.572.

Preece, S.J., Westgate, J.A., Gorton, M.P., 1992. Compositional variation and provenance of late Cenozoic distal tephra beds, Fairbanks area, Alaska. Quaternary International 13/14, 97-101

Preece, S.J., Westgate, J.A., Stemper, B.S., Péwé, T.L., 1999. Tephrochronology of late Cenozoic loess at Fairbanks, central Alaska. Geological Society of America Bulletin 111, 71-90.

Preece, S.J., Westgate, J.A., Alloway, B.V., Milner, M.W., 2000. Characterization, identity, distribution, and source of late Cenozoic tephra beds in the Klondike district of the Yukon, Canada. Canadian Journal of Earth Sciences 37, 983-996.

Rosenblum, S., Brownfield, I.K., 1999. Magnetic susceptibilities of minerals. USGS Open-File Report 99-529.

Sandhu, A.S., Westgate, J.A., 1995. The correlation between reduction in fission-track diameter and areal track density in volcanic glass shards and its application in dating tephra beds. Earth and Planetary Science Letters 131, 479-488.

Sandhu, A.S., Westgate, J.A., Preece, S.J., Froese, D.G., 2000. Glass- fission track ages of late Cenozoic distal tephra beds in the Klondike district, Yukon Territory. In: Emond, D.S., Weston, L.H. (Eds), Yukon Exploration and Geology 2000. Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, pp. 247-256.

Schaefer, J. R. G., 2002. Stratigraphy, major oxide geochemistry, and 40Ar/39Ar geochronology of a tephra section near Tok, Alaska. MSc Thesis, University of Alaska, Fairbanks.

Schweger, C.E., Matthews Jr., J.V., 1985. Early and middle Wisconsinan environments of eastern Beringia: stratigraphic and paleoecological implications of the Old Crow tephra. Géographie physique et Quaternaire 39, 275-290.

Shackleton, N.J., A. Berger, A., Peltier, W.R., 1990. An alternative astronomical calibration of the lower Pleistocene timescale based on ODP site 677. Transactions of the Royal Society of Edinburgh, Earth Sciences 81, 251–261.

Shane, P., Froggatt, P., Black, T., Westgate, J., 1995. Chronology of Pliocene and Quaternary bioevents and climatic events from fission-track ages on tephra beds, Wairarapa, New Zealand. Earth and Planetary Science Letters 130, 141-154.

Tyron, C.A., 2006. "Early" Middle Stone Age Lithic Technology of the Kapthurin Formation (Kenya). Current Anthropology 47, 367-375.

Westgate, J.A., Hamilton, T.D., Gorton, M.P., 1983. Old Crow tephra: A new Pleistocene stratigraphic marker across north-central Alaska and Western Yukon Territory. Quaternary Research 19, 38-54.

Westgate, J.A., Walter, R.C., Pearce, G.W., Gorton, M.P., 1985. Distribution, stratigraphy, petrochemistry, and palaeomagnetism of the late Pleistocene Old Crow tephra in Alaska and the Yukon. Canadian Journal of Earth Sciences 22, 893-906.

Westgate, J.A., Stemper, B.A., Péwé, T.L., 1990. A 3 m.y. record of Pliocene-Pleistocene loess in interior Alaska. Geology 18, 858-861.

Westgate J.A., Preece S.J., Froese D.G., Walter R.C., Sandhu A.S., Schweger C.E., 2001. Dating Early and Middle (Reid) Pleistocene Glaciations in Central Yukon by Tephrochronology. Quaternary Research 56, 335-348.

Westgate, J.A., Preece, S.J., Péwé, T.L., 2003a. The Dawson Cut Forest Bed in the Fairbanks area, Alaska, is about two million years old. Quaternary Research 60, 2-8.

Westgate, J.A., Sandhu, A.S., Preece, S.J. and Froese, D.G., 2003b. Age of the gold-bearing White Channel Gravel, Klondike district, Yukon. In: Emond, D.S., Lewis, L.L., (Eds), Yukon Exploration and Geology. Exploration and Geological Services Division, Yukon Region, Yukon, Indian and Northern Affairs Canada, pp. 241-250.

Westgate, J.A., Preece, S.J., Froese, D.G., Schweger, C.E., 2004. Tephrochronological Studies of Late Neogene Sediments in Interior Alaska and the Yukon Territory. AGU Annual Fall Meeting, San Francisco, California, Fall Meet. Suppl. 85(47), Abstract V21C-01.

Westgate, J.A., Preece, S.J., 2005. A cautionary tale of two tephras: The scientific method eking out errors in the Late Cenozoic tephrochronological record of Eastern Beringia. Annual Meeting and Exposition of the Geological Society of America, Abstracts with Programs.

Zazula, G.D, Froese, D.G, Westgate, J.A., La Farge, C., Mathewes, R.W., 2005. Paleoecology of beringian "packrat" middens from central Yukon Territory, Canada. Quaternary Research 63, 189-198.

CHAPTER 5- CONCLUSIONS

5.1. Conclusions

Chester Bluff, a terrace along the Yukon River in the Yukon Charley Rivers National Preserve, hosts an extensive middle to late Pleistocene sedimentary record of loess that contains at least 19 tephra beds and interbedded organic horizons. The Old Crow tephra (140 ± 10 ka), a major regional stratigraphic marker, GI tephra known from Fairbanks (560 ± 80 ka), Preido Hill tephra from the Klondike and VT tephra (77.8 ± 4.1 ka), known from both the Klondike and Fairbanks regions are present (Westgate et al., 1990; Preece et al., 2000; Sandhu et al., 2001; Berger, 2003; Froese et al., 2003). The discovery of these tephra beds will ultimately aid in correlating disparate paleoenvironmental records across eastern Beringia, in particular, between the Fairbanks and Klondike regions. In addition, the Preido Hill and GI tephra beds are placed in stratigraphic context with other regional and dated tephra beds, providing age control on the undated Preido Hill tephra and reinforcing the glass fission-track age of GI. The thermoluminescence (TL) age of Berger (2003) for the VT tephra is also supported by the stratigraphic context of VT at Chester Bluff.

This study also characterises 15 previously unidentified tephra beds, including 12 Type II beds from the Wrangell volcanic field and/or Hayes volcano, one Type I bed from the Aleutian-Arc Alaska Peninsula and 3 unclassified beds. Several of these tephra beds, in particular CB and BT, are associated with organic horizons that represent warm interstadial or interglacial conditions and could prove to be important stratigraphic markers for future studies in eastern Beringia.

Chester Bluff is normally magnetized, indicating the entire sequence is of Bruhnes age (<780,000 yrs). VT provides a minimum age of 77.8 ± 4.1 ka. GI, in concert with an interglacial horizon within outburst flood deposits underlying the loess, constrains the basal age of the loess to between 560 ± 80 ka and ~700 ka. Within the loess is at least one interglacial of MIS 7 age or older associated with CB. At least four additional organic horizons representing interstadials or interglacials are present. Collectively, sediments at the Chester Bluff span most of the middle to late Pleistocene (i.e. ~ 780 to < 77.8 ± 4.1 ka). This study can only be considered a reconnaissance of Chester Bluff, as only three of 20 bluffs were examined in detail.

5.2. Further Study

There is considerable potential for additional tephrochronological and paleoenvironmental work at this site. This includes:

i. Examination of more bluffs, which will undoubtedly lead to the discovery of more tephra beds and potentially important organic horizons. It will be particularly important to locate Old Crow tephra in direct stratigraphic association with CB and BT to determine if the stratigraphic relations presented in this thesis are correct. This will also hopefully lead to more dated and known tephra beds.

ii. Several tephra beds at Chester Bluff contain chunky glass shards suitable for glass fission-track dating and should be recollected in larger volumes as required for dating. These beds include CB, Preido Hill, CR and possibly BT.

iii. Extensive sampling of the organic horizons for plant macrofossils, insect remains and pollen to determine their paleoenvironmental significance. This is of particular importance for the organic horizons associated with Old Crow, BT, CB, Preido Hill and GI. If they are indeed interglacials it would mean that virtually all major interglacials between MIS 5 and 19 may be represented at Chester Bluff.

iv. Chester Bluff is one of several terraces capped with loess present along the Yukon River between Dawson City, Yukon Territory, and Chester Bluff. These sites are at varying elevations, some up to 80 m above river level, and presumably much older that the Chester Bluff terrace. It may be that linking the loess records and their interbedded tephra could provide a near complete Pleistocene distal tephra and paleoenvironmental record.

5.3. References:

Berger, G.W., 2003. Luminescence chronology of late Pleistocene loess-paleosol and tephra sequences near Fairbanks, Alaska. Quaternary Research 60, 70-83.

Froese, D.G., Smith, D.G., Westgate, J.A. Ager, T.A., Preece, S.J., Sandhu, A., Enkin, R.J., Weber, F., 2003. Recurring middle Pleistocene outburst floods in east-central Alaska. Quaternary Research 60, 50-62.

Preece, S.J., Westgate, J.A., Alloway, B.V., Milner, M.W., 2000. Characterization, identity, distribution, and source of late Cenozoic tephra beds in the Klondike district of the Yukon, Canada. Canadian Journal of Earth Sciences 37, 983-996.

Sandhu, A.S., Westgate, J.A., Preece, S.J., Froese, D.G., 2001. Glass- fission track ages of late Cenozoic distal tephra beds in the Klondike district, Yukon Territory. In: Emond, D.S., Weston, L.H. (Eds), Yukon Exploration and Geology 2000. Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, pp. 247-256.

Westgate, J.A., Stemper, B.A., Péwé, T.L., 1990. A 3 m.y. record of Pliocene-Pleistocene loess in interior Alaska. Geology 18, 858-861.

6. Appendix: Geochemical data

6.1. Glass geochemical data

Kandik River (KR)
Andrew Creek tephra (AC)
Slavens Roadhouse (SR)
Beaton Pup (BP)
Preido Hill (PrH)
Ben Creek (BC)
Tom King tephra (TK)
McGregor Cabin (MC)
Yukon Tanana (YT)
Geophysical Institute (GI)
Variegated (VT)
Charley River (CR)
Old Crow (OC)
Biederman tephra (BT)
Woodchopper Creek (WC)
Coal Creek Tephra (CC)
Charley Village (CV)
Chester Bluff (CB$_1$-white; CB$_2$-pink)
White River north (WRN)
White River east (WRE)

Name	Sample	SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	Cl	Total	H20$_{diff}$	Date probed
OC	**UA1099-1**	75.10	0.37	12.86	1.77	0.07	0.26	1.51	4.10	3.72	0.25	100.00	3.24	Apr. 27 2006
	UA1099-2	75.33	0.33	12.98	1.81	0.02	0.30	1.46	3.82	3.65	0.29	100.00	3.77	
	UA1099-3	74.87	0.31	13.30	1.78	0.06	0.31	1.59	3.76	3.72	0.29	100.00	1.87	
	UA1099-4	75.37	0.27	12.91	1.78	0.05	0.28	1.49	3.80	3.67	0.38	100.00	1.86	
	UA1099-5	75.33	0.28	12.87	1.73	0.07	0.29	1.52	3.83	3.74	0.33	100.00	5.51	
	UA1099-6	74.90	0.34	13.22	1.81	0.09	0.27	1.61	3.68	3.74	0.33	100.00	4.66	
	UA1099-7	75.66	0.30	13.06	1.65	0.00	0.28	1.41	3.76	3.62	0.27	100.00	3.80	
	UA1099-10	75.23	0.30	13.06	1.85	0.13	0.26	1.45	3.90	3.56	0.26	100.00	5.42	
	UA1099-11	75.22	0.27	13.03	1.87	0.09	0.33	1.50	3.61	3.80	0.29	100.00	4.53	
	UA1099-12	75.31	0.24	12.94	1.80	0.03	0.30	1.54	4.00	3.54	0.29	100.00	2.23	
	UA1099-13	74.98	0.30	13.25	1.74	0.06	0.30	1.54	3.82	3.73	0.28	100.00	5.42	
	UA1099-14	75.20	0.33	13.00	1.78	0.03	0.27	1.53	3.77	3.78	0.30	100.00	3.41	
	UA1099-15	75.60	0.28	13.02	1.65	0.05	0.27	1.48	3.79	3.63	0.23	100.00	4.28	
	UA1099-16	75.42	0.34	12.95	1.68	0.07	0.30	1.49	3.74	3.73	0.29	100.00	4.12	
	UA1099-17	75.33	0.26	12.71	1.86	0.11	0.25	1.45	4.04	3.71	0.28	100.00	4.07	
	UA1099-18	75.74	0.28	12.93	1.83	0.00	0.27	1.49	3.19	3.98	0.29	100.00	7.68	
	UA1099-19	75.51	0.33	12.85	1.69	0.03	0.30	1.50	3.64	3.81	0.34	100.00	4.64	
	UA1099-20	74.27	0.29	13.88	2.05	0.10	0.38	1.56	3.53	3.61	0.33	100.00	8.81	
	Ua 1099-1	75.17	0.39	13.19	1.81	0.08	0.30	1.53	3.75	3.50	0.27	100.00	3.26	Sept. 27 2006
	Ua 1099-2	75.30	0.26	13.15	1.79	0.08	0.28	1.54	3.66	3.65	0.28	100.00	4.24	
	Ua 1099-3	75.19	0.35	13.27	1.79	0.06	0.27	1.42	3.82	3.59	0.24	100.00	5.31	
	Ua 1099-4	74.65	0.38	13.59	1.89	0.02	0.26	1.53	3.71	3.66	0.31	100.00	4.59	

Ua 1099-5	75.59	0.28	12.80	1.91	0.08	0.32	1.47	3.68	3.63	0.24	100.00	4.31	
Ua 1099-6	75.24	0.32	13.16	1.80	0.05	0.29	1.54	3.59	3.73	0.27	100.00	4.01	
Ua 1099-7	74.65	0.35	13.53	1.97	0.09	0.28	1.57	3.61	3.66	0.29	100.00	6.03	
Ua 1099-8	75.02	0.32	13.15	1.83	0.06	0.31	1.59	3.74	3.75	0.23	100.00	3.65	
Ua 1099-9	75.41	0.41	12.78	1.85	0.08	0.29	1.59	3.70	3.60	0.28	100.00	4.34	
Ua 1099-10	75.67	0.30	12.75	1.74	0.08	0.27	1.48	3.65	3.81	0.25	100.00	4.58	
Ua 1099-11	75.35	0.36	13.01	1.82	0.03	0.30	1.49	3.71	3.64	0.29	100.00	4.79	
Ua 1099-12	75.16	0.28	13.20	1.82	0.11	0.27	1.50	3.75	3.63	0.29	100.00	4.88	
Ua 1099-13	74.91	0.29	13.38	1.88	0.06	0.26	1.47	3.59	3.86	0.30	100.00	5.66	
Ua 1099-14	75.22	0.28	12.85	1.69	0.06	0.31	1.61	3.84	3.84	0.30	100.00	3.83	
Ua 1099-15	75.19	0.41	12.98	1.82	0.05	0.25	1.47	3.83	3.70	0.30	100.00	3.23	
Ua 1099-16	74.76	0.37	13.20	1.82	0.07	0.33	1.56	3.95	3.61	0.32	100.00	2.08	
Ua 1099-17	74.60	0.33	13.37	1.86	0.03	0.31	1.51	4.05	3.62	0.31	100.00	5.32	
Ua 1099-18	75.28	0.37	13.15	1.76	0.05	0.28	1.57	3.76	3.52	0.26	100.00	5.11	
Ua 1099-19	75.53	0.25	12.79	1.89	0.07	0.29	1.54	3.66	3.69	0.29	100.00	4.63	
Ua 1099-20	74.92	0.28	13.34	1.85	0.12	0.32	1.51	3.77	3.61	0.28	100.00	4.46	
UA1099-1	75.06	0.34	13.07	1.76	0.09	0.27	1.51	3.67	3.90	0.34	100.00	3.75	Oct. 27 2005
UA1099-2	75.60	0.26	13.17	1.76	0.04	0.23	1.42	3.58	3.68	0.26	100.00	3.44	
UA1099-3	75.09	0.35	12.80	1.77	0.10	0.28	1.55	3.96	3.77	0.34	100.00	4.04	
UA1099-5	75.52	0.29	12.90	1.86	0.08	0.25	1.49	3.68	3.65	0.28	100.00	3.85	
UA1099-6	75.77	0.33	12.86	1.84	0.02	0.18	1.48	3.49	3.74	0.28	100.00	5.22	
UA1099-7	75.56	0.32	12.90	1.77	0.06	0.25	1.51	3.65	3.70	0.28	100.00	4.67	
UA1099-8	75.40	0.31	13.16	1.76	0.08	0.23	1.52	3.58	3.69	0.26	100.00	1.12	
UA1099-9	75.28	0.30	13.03	1.75	0.03	0.26	1.52	3.85	3.63	0.34	100.00	2.88	
UA1099-10	75.32	0.30	13.04	1.84	0.08	0.25	1.53	3.71	3.62	0.30	100.00	2.39	
UA1099-11	75.01	0.23	13.05	1.86	0.13	0.27	1.47	3.90	3.78	0.29	100.00	4.55	
UA1099-12	75.33	0.35	12.99	1.76	0.10	0.20	1.52	3.51	3.91	0.33	100.00	5.30	
UA1099-13	75.57	0.20	12.92	1.87	0.07	0.25	1.64	3.48	3.72	0.28	100.00	4.81	
UA1099-14	75.50	0.31	13.20	1.79	0.03	0.25	1.45	3.38	3.78	0.31	100.00	5.05	
UA1099-15	75.43	0.23	13.00	1.78	0.06	0.24	1.60	3.64	3.73	0.29	100.00	4.91	
UA1099-16	75.27	0.30	13.11	1.79	0.03	0.26	1.58	3.65	3.70	0.30	100.00	3.76	
UA1099-18	75.41	0.30	13.03	1.88	0.01	0.31	1.48	3.66	3.62	0.30	100.00	1.42	
UA1099-19	75.36	0.23	13.06	1.78	0.07	0.31	1.58	3.63	3.72	0.27	100.00	3.10	
UA1099-20	75.49	0.21	12.98	1.82	0.01	0.26	1.53	3.65	3.79	0.26	100.00	4.21	

UA1233-1	75.15	0.32	13.15	1.81	0.06	0.30	1.57	3.80	3.59	0.25	100.00	5.46	Sept. 27 2006
UA1233-2	74.88	0.24	13.08	1.98	0.04	0.28	1.61	3.79	3.86	0.25	100.00	6.26	
UA1233-3	75.11	0.36	12.92	1.78	0.10	0.33	1.55	3.95	3.62	0.28	100.00	4.42	
UA1233-4	74.79	0.36	13.02	1.81	0.04	0.32	1.74	3.93	3.70	0.29	100.00	6.74	
UA1233-5	74.93	0.21	13.07	1.78	0.08	0.27	1.61	4.03	3.78	0.23	100.00	5.88	
UA1233-6	74.60	0.28	13.16	1.86	0.06	0.28	1.68	3.86	3.94	0.27	100.00	6.13	
UA1233-7	74.64	0.34	13.08	1.77	0.07	0.30	1.65	3.89	3.96	0.30	100.00	9.20	
UA1233-8	74.99	0.29	13.15	1.79	0.05	0.32	1.54	3.83	3.77	0.29	100.00	5.37	
UA1233-10	74.81	0.32	13.12	1.80	0.07	0.29	1.64	4.01	3.62	0.32	100.00	3.67	
UA1233-11	74.76	0.27	13.32	1.66	0.07	0.24	1.61	4.10	3.74	0.21	100.00	6.34	
UA1233-12	75.29	0.35	13.20	1.71	0.06	0.27	1.53	3.69	3.62	0.28	100.00	4.50	
UA1233-13	75.39	0.26	13.26	1.67	0.05	0.26	1.58	3.74	3.54	0.25	100.00	5.54	
UA1233-14	75.01	0.28	13.17	1.70	0.06	0.32	1.70	3.74	3.76	0.25	100.00	7.12	
UA1233-15	75.12	0.27	12.89	1.62	0.06	0.27	1.69	3.83	3.95	0.28	100.00	7.44	
UA1211-1	75.22	0.29	13.17	1.72	0.07	0.37	1.51	3.92	3.49	0.25	100.00	3.78	Sept. 27 2006
UA1211-2	74.77	0.31	13.21	1.74	0.11	0.28	1.65	3.82	3.78	0.32	100.00	5.40	
UA1211-3	75.16	0.33	13.20	1.64	0.06	0.29	1.59	3.77	3.73	0.23	100.00	5.31	
UA1211-4	75.59	0.26	12.96	1.71	0.05	0.30	1.60	3.59	3.66	0.27	100.00	5.59	
UA1211-5	74.96	0.29	13.21	1.73	0.08	0.25	1.61	3.91	3.67	0.29	100.00	4.98	
UA1211-6	75.30	0.26	13.05	1.77	0.03	0.28	1.57	3.79	3.65	0.31	100.00	4.78	
UA1211-7	75.51	0.24	13.11	1.68	0.05	0.31	1.53	3.77	3.54	0.25	100.00	4.51	
UA1211-8	75.67	0.27	13.09	1.69	0.01	0.34	1.52	3.64	3.52	0.25	100.00	5.37	
UA1211-9	76.22	0.21	12.75	1.50	0.05	0.26	1.37	3.62	3.75	0.28	100.00	5.12	
UA1211-10	75.49	0.24	13.20	1.56	0.13	0.26	1.54	3.54	3.78	0.26	100.00	4.35	
UA1211-11	75.00	0.27	13.09	1.68	0.10	0.28	1.56	3.75	3.94	0.34	100.00	4.71	
UA1211-12	75.50	0.29	13.08	1.66	0.01	0.26	1.57	3.88	3.55	0.20	100.00	4.72	
UA1211-13	75.37	0.28	13.26	1.74	0.03	0.23	1.57	3.46	3.75	0.30	100.00	4.97	
UA1211-14	75.78	0.26	13.01	1.62	0.08	0.30	1.45	3.73	3.54	0.22	100.00	0.87	
UA1211-15	75.21	0.30	13.15	1.70	0.09	0.26	1.54	3.76	3.70	0.29	100.00	1.94	
UA1211-16	75.41	0.27	13.14	1.65	0.11	0.30	1.57	3.50	3.72	0.33	100.00	5.02	
UA1211-17	75.29	0.27	12.94	1.60	0.05	0.29	1.51	3.80	3.97	0.28	100.00	7.07	
UA1211-18	75.12	0.28	13.13	1.74	0.09	0.30	1.58	3.92	3.59	0.25	100.00	4.88	
AVERAGE	75.23	0.30	13.08	1.77	0.06	0.28	1.54	3.75	3.70	0.28	100.00	4.59	
STDEV	0.32	0.05	0.19	0.09	0.03	0.03	0.07	0.16	0.11	0.03	0.00	1.49	n=88

GI	UT 1872-1	70.23	0.51	14.62	3.46	0.15	0.44	2.04	4.56	3.85	0.15	100.00	1.44	U of T data
	UT 1872-2	70.45	0.54	14.53	3.37	0.06	0.50	1.95	4.51	3.92	0.18	100.00	2.62	
	UT 1872-3	70.04	0.51	14.62	3.45	0.08	0.55	1.75	4.90	3.89	0.21	100.00	1.43	
	UT 1872-5	70.05	0.64	14.54	3.45	0.08	0.49	1.99	4.57	4.03	0.17	100.00	3.62	
	UT 1872-6	70.57	0.61	14.27	3.42	0.13	0.51	1.81	4.77	3.77	0.13	100.00	0.94	
	UT 1872-7	70.19	0.59	14.52	3.61	0.15	0.61	2.00	4.37	3.78	0.18	100.00	4.70	
	UT 1872-9	70.05	0.57	14.62	3.50	0.15	0.55	1.90	4.49	3.96	0.20	100.00	3.66	
	UT 1872-10	66.02	0.81	15.37	4.91	0.08	1.10	3.44	4.95	3.16	0.16	100.00	0.97	
	UT 1872-11	70.23	0.50	14.32	3.30	0.12	0.49	2.11	4.88	3.90	0.16	100.00	2.44	
	UT 1872-14	69.78	0.50	14.64	3.36	0.17	0.47	2.04	4.84	3.99	0.20	100.00	2.43	
	UT 1872-15	69.97	0.64	14.54	3.33	0.12	0.51	1.87	4.93	3.90	0.18	100.00	0.65	
	UT 1872-16	70.19	0.50	14.47	3.39	0.03	0.55	2.02	4.75	3.88	0.22	100.00	2.34	
	UT 1872-17	69.78	0.45	14.79	3.47	0.03	0.51	1.93	4.81	4.02	0.20	100.00	0.51	
	UT 1871-1	69.90	0.45	14.55	3.52	0.09	0.53	1.99	4.70	4.05	0.23	100.00	2.63	
	UT 1871-3	69.14	0.79	14.69	3.60	0.08	0.65	2.32	4.91	3.64	0.18	100.00	0.40	
	UT 1871-4	69.83	0.64	14.55	3.47	0.16	0.51	1.93	4.81	3.85	0.25	100.00	1.87	
	UT 1871-6	70.43	0.47	14.48	3.50	0.04	0.58	1.89	4.58	3.83	0.20	100.00	3.40	
	UT 1871-7	70.51	0.28	14.40	3.32	0.10	0.53	2.06	4.69	3.96	0.16	100.00	4.33	
	UT 1871-8	69.61	0.66	14.44	3.44	0.13	0.50	2.01	5.02	4.02	0.19	100.00	2.78	
	UT 1871-9	70.11	0.56	14.45	3.50	0.11	0.55	2.25	4.59	3.68	0.21	100.00	0.04	
	UT 1871-10	70.38	0.57	14.44	3.30	0.11	0.49	1.82	4.77	3.90	0.21	100.00	1.40	
	UT 1871-12	69.98	0.68	14.54	3.42	0.01	0.62	2.11	4.61	3.86	0.18	100.00	4.04	
	UT 1871-15	70.51	0.71	14.26	3.17	0.13	0.45	1.71	4.67	4.16	0.22	100.00	4.14	
	uT 1743-1	70.44	0.44	14.53	3.65	0.07	0.46	2.16	4.39	3.65	0.21	100.00	1.23	Sept. 27 2005
	uT 1743-3	70.51	0.66	14.37	3.51	0.10	0.52	2.18	4.31	3.68	0.18	100.00	3.08	
	uT 1743-5	67.17	0.79	15.51	4.72	0.17	0.97	3.15	4.17	3.21	0.13	100.00	5.22	
	uT 1743-6	70.80	0.52	14.71	3.48	0.10	0.46	1.88	4.03	3.81	0.19	100.00	4.54	
	uT 1743-9	69.37	0.68	14.95	3.91	0.09	0.66	2.28	4.34	3.54	0.18	100.00	0.94	
	uT 1743-10	69.32	0.55	15.04	3.89	0.11	0.61	2.36	4.40	3.55	0.18	100.00	1.22	
	uT 1743-11	70.60	0.51	14.68	3.42	0.12	0.47	1.93	4.28	3.79	0.21	100.00	0.79	
	uT 1743-16	70.51	0.59	14.70	3.40	0.06	0.52	2.04	4.23	3.77	0.19	100.00	4.59	
	uT 1743-17	70.81	0.49	14.76	3.46	0.07	0.42	1.98	4.16	3.67	0.18	100.00	3.96	
	UA 1055-1	71.04	0.61	14.41	3.29	0.07	0.46	1.89	4.19	3.83	0.19	100.00	4.43	Sept. 27 2005

UA 1055-2	70.38	0.52	14.75	3.57	0.11	0.47	2.16	4.04	3.76	0.24	100.00	4.20	
UA 1055-4	71.07	0.60	14.21	3.40	0.12	0.47	2.08	4.13	3.74	0.17	100.00	4.72	
UA 1055-7	68.90	0.64	15.08	4.24	0.13	0.80	2.73	4.10	3.25	0.14	100.00	1.06	
UA 1055-8	70.77	0.53	14.18	3.41	0.01	0.52	2.03	4.44	3.87	0.24	100.00	1.65	
UA 1055-9	70.38	0.59	14.64	3.49	0.02	0.53	1.98	4.23	3.95	0.20	100.00	3.06	
UA 1055-10	70.35	0.51	14.40	3.47	0.15	0.47	2.04	4.37	4.01	0.21	100.00	0.72	
UA 1055-11	70.49	0.57	14.12	3.46	0.06	0.47	2.07	4.49	4.06	0.21	100.00	0.97	
UA 1055-12	70.19	0.60	14.56	3.54	0.08	0.47	2.01	4.47	3.85	0.23	100.00	3.51	
UA 1055-13	70.73	0.49	14.11	3.37	0.09	0.51	2.06	4.48	3.97	0.18	100.00	2.71	
UA 1055-14	67.95	0.66	15.00	4.40	0.14	0.82	3.00	4.49	3.36	0.17	100.00	0.49	
UA 1055-15	70.61	0.62	14.32	3.75	0.11	0.49	2.19	3.94	3.75	0.23	100.00	5.02	
UA 1055-16	69.56	0.60	14.57	4.03	0.16	0.61	2.45	4.16	3.65	0.20	100.00	3.46	
UA 1055-17	70.64	0.69	14.15	3.50	0.07	0.48	2.03	4.43	3.75	0.26	100.00	1.53	
UA 1056-1	70.77	0.57	14.48	3.39	0.12	0.47	2.05	4.06	3.85	0.24	100.00	4.72	Sept. 27 2005
UA 1056-2	70.90	0.56	14.54	3.22	0.09	0.43	2.05	4.19	3.82	0.20	100.00	1.44	
UA 1056-4	70.98	0.60	14.22	3.44	0.13	0.40	1.88	4.26	3.89	0.21	100.00	3.95	
UA 1056-6	70.47	0.61	14.68	3.16	0.08	0.52	2.09	4.29	3.91	0.18	100.00	3.55	
UA 1056-7	70.66	0.53	14.66	3.09	0.09	0.50	2.19	4.26	3.81	0.20	100.00	2.19	
UA 1056-8	70.44	0.63	14.69	3.33	0.06	0.49	2.00	4.24	3.88	0.25	100.00	3.22	
UA 1056-9	70.00	0.60	14.72	3.40	0.07	0.52	2.18	4.52	3.79	0.19	100.00	2.40	
UA 1056-10	70.67	0.50	14.66	3.21	0.00	0.46	2.02	4.42	3.78	0.27	100.00	3.70	
UA 1056-11	70.27	0.53	14.60	3.42	0.05	0.57	2.14	4.34	3.83	0.25	100.00	1.56	
UA 1056-13	70.91	0.65	14.36	3.40	0.07	0.48	1.80	4.33	3.80	0.20	100.00	3.61	
UA 1056-14	71.07	0.73	14.23	3.65	0.09	0.49	1.83	4.09	3.59	0.23	100.00	8.64	
UA 1056-15	69.46	0.60	14.71	3.37	0.10	0.51	2.18	4.54	4.06	0.48	100.00	5.52	
UA 1056-17	71.31	0.50	14.22	3.39	0.11	0.44	1.93	4.13	3.73	0.23	100.00	2.14	
UA 1077-1	70.71	0.63	14.59	3.39	0.13	0.50	1.85	4.19	3.88	0.14	100.00	0.60	Sept. 27 2005
UA 1077-2	70.58	0.54	14.59	3.57	0.10	0.47	2.08	4.15	3.71	0.21	100.00	1.69	
UA 1077-5	69.90	0.59	14.82	3.81	0.07	0.59	2.29	4.12	3.64	0.16	100.00	0.78	
UA 1077-6	69.77	0.52	14.77	3.18	0.10	0.41	2.11	4.60	4.04	0.50	100.00	3.50	
UA 1077-7	70.77	0.50	14.51	3.30	0.11	0.44	2.04	4.32	3.76	0.25	100.00	3.93	
UA 1077-9	70.93	0.44	14.65	3.22	0.17	0.46	2.17	4.08	3.67	0.21	100.00	5.05	
UA 1077-10	69.77	0.62	14.87	3.47	0.13	0.58	2.22	4.53	3.61	0.20	100.00	1.15	
UA 1077-11	70.01	0.62	14.71	3.65	0.11	0.56	2.38	4.07	3.73	0.16	100.00	4.10	

UA 1077-12	69.83	0.58	14.84	3.62	0.10	0.62	2.38	4.35	3.53	0.15	100.00	0.72	
UA 1077-13	67.66	0.70	15.08	4.58	0.09	0.93	3.10	4.53	3.17	0.17	100.00	0.53	
UA 1077-15	70.44	0.67	14.80	3.46	0.11	0.54	2.05	3.94	3.80	0.19	100.00	4.74	
UT1872-1	70.30	0.58	14.24	3.66	0.12	0.56	1.95	4.50	3.95	0.14	100.00	6.40	Oct. 30 2006
UT1872-2	70.06	0.58	14.61	3.37	0.11	0.56	2.08	4.52	3.92	0.19	100.00	5.56	
UT1872-3	70.48	0.51	14.61	3.34	0.09	0.45	1.97	4.60	3.82	0.15	100.00	4.21	
UT1872-4	70.72	0.59	14.57	3.30	0.11	0.51	1.84	4.11	4.08	0.18	100.00	6.38	
UT1872-5	70.78	0.56	14.58	3.34	0.02	0.54	1.84	4.28	3.83	0.23	100.00	5.75	
UT1872-6	70.22	0.58	14.50	3.50	0.13	0.58	2.06	4.30	3.89	0.23	100.00	5.02	
UT1872-7	69.82	0.58	14.71	3.51	0.09	0.55	2.16	4.64	3.77	0.17	100.00	1.70	
UT1872-8	70.30	0.60	14.61	3.35	0.08	0.53	2.11	4.39	3.86	0.18	100.00	5.12	
UT1872-10	70.25	0.48	14.80	3.48	0.10	0.54	1.96	4.32	3.83	0.24	100.00	7.30	
UT1872-11	70.30	0.65	14.47	3.32	0.08	0.44	2.07	4.42	4.02	0.23	100.00	5.03	
UT1872-12	70.14	0.56	14.31	3.65	0.13	0.54	2.16	4.44	3.84	0.23	100.00	5.38	
UT1872-13	70.34	0.54	14.56	3.21	0.15	0.51	2.10	4.48	3.90	0.20	100.00	5.95	
UT1872-14	70.57	0.54	14.39	3.34	0.10	0.51	2.00	4.77	3.64	0.15	100.00	3.05	
UT1872-15	70.27	0.49	14.46	3.56	0.10	0.54	2.10	4.47	3.80	0.20	100.00	4.34	
UT1872-16	70.28	0.57	14.66	3.33	0.11	0.53	2.15	4.24	3.88	0.26	100.00	4.72	
UT1872-17	70.24	0.54	14.58	3.50	0.12	0.44	2.05	4.31	4.00	0.22	100.00	5.98	
UT1872-18	70.12	0.61	14.30	3.62	0.07	0.54	1.93	4.64	4.00	0.17	100.00	5.85	
AVERAGE	70.16	0.58	14.58	3.51	0.10	0.54	2.11	4.42	3.80	0.20	100.00	3.19	
STDEV	0.81	0.08	0.25	0.31	0.04	0.11	0.29	0.26	0.19	0.05	0.00	1.88	n=87
UT1872-9	66.11	0.79	15.00	5.20	0.18	1.17	3.63	4.62	3.13	0.17	100.00	1.66	
UT 1872-8	66.74	0.72	15.67	4.55	0.04	1.05	3.39	4.66	3.07	0.12	100.00	0.79	
UT 1872-12	65.84	1.09	15.37	4.90	0.11	1.20	3.29	4.86	3.22	0.13	100.00	0.30	
UT 1872-13	65.50	0.83	15.34	5.77	0.14	1.33	3.82	4.13	2.97	0.16	100.00	1.06	
UT 1872-18	66.47	0.42	15.38	5.16	0.12	1.19	3.16	4.71	3.22	0.17	100.00	2.99	
UT 1871-14	65.95	0.87	15.40	4.98	0.09	1.11	3.39	4.66	3.35	0.21	100.00	0.75	
uT 1743-2	65.92	0.85	15.71	5.27	0.16	1.11	3.76	4.07	2.98	0.18	100.00	0.72	
uT 1743-4	60.60	1.07	16.13	7.55	0.14	2.28	6.08	3.90	2.13	0.12	100.00	0.01	
uT 1743-8	65.88	0.81	15.16	5.35	0.16	1.12	3.81	4.42	3.15	0.15	100.00	0.53	
uT 1743-14	64.56	0.78	15.72	6.15	0.12	1.42	4.29	4.36	2.50	0.11	100.00	1.76	
UA 1055-3	65.49	0.84	15.39	5.34	0.13	1.25	3.95	4.27	3.18	0.16	100.00	0.21	
UA 1055-5	66.12	0.90	15.10	5.21	0.14	1.07	3.56	4.52	3.21	0.17	100.00	-0.11	

	UA 1055-6	65.99	0.88	15.31	5.22	0.17	1.09	3.50	4.45	3.22	0.17	100.00	-0.10	
	UA 1056-3	65.55	0.80	15.74	5.27	0.12	1.20	3.89	4.34	2.97	0.12	100.00	0.78	
	UA 1056-12	66.58	0.84	15.18	4.61	0.09	1.05	3.66	4.68	3.15	0.16	100.00	0.93	
	UA 1056-16	66.40	0.92	15.65	4.84	0.13	1.00	3.47	4.40	3.01	0.18	100.00	2.09	
	UA 1077-4	65.60	0.93	15.53	5.34	0.21	1.05	3.51	4.40	3.26	0.16	100.00	6.78	
	UA 1077-8	66.21	0.76	15.60	5.08	0.22	1.11	3.71	4.08	3.07	0.15	100.00	1.57	
	UA 1077-14	67.01	0.84	15.06	4.77	0.14	1.00	3.53	4.16	3.31	0.18	100.00	1.62	
	UA 1077-16	65.97	0.72	15.37	5.15	0.11	1.14	3.67	4.52	3.13	0.22	100.00	2.78	
	AVERAGE	65.70	0.84	15.46	5.29	0.13	1.20	3.76	4.40	3.06	0.16	100.00	1.34	
	STDEV	1.35	0.14	0.27	0.66	0.04	0.28	0.62	0.25	0.29	0.03	0.00	1.59	n=20
CR	**UA 1052-3**	72.38	0.27	15.75	1.78	0.07	0.64	2.09	4.46	2.49	0.07	100.00	5.88	Sept. 26 2005
	UA 1052-4	72.67	0.28	15.63	1.83	0.03	0.61	2.22	4.19	2.46	0.08	100.00	5.74	
	UA 1052-5	72.24	0.24	15.83	1.89	0.00	0.64	2.12	4.50	2.49	0.06	100.00	5.50	
	UA 1052-6	72.38	0.14	15.74	1.81	0.07	0.67	2.14	4.43	2.49	0.12	100.00	4.81	
	UA 1052-7	72.16	0.22	16.06	1.80	0.06	0.56	2.20	4.41	2.46	0.07	100.00	5.23	
	UA 1052-8	71.80	0.34	15.96	1.88	0.14	0.68	2.15	4.46	2.47	0.12	100.00	2.19	
	UA 1052-9	72.09	0.26	15.90	1.90	0.06	0.61	2.08	4.46	2.56	0.08	100.00	2.55	
	UA 1052-10	72.16	0.35	16.02	1.85	0.08	0.52	2.09	4.32	2.50	0.12	100.00	6.19	
	UA 1052-11	72.51	0.17	15.61	1.86	0.03	0.58	2.09	4.51	2.49	0.14	100.00	5.36	
	UA 1052-13	71.78	0.21	15.99	1.76	0.13	0.60	2.13	4.81	2.50	0.10	100.00	5.52	
	UA 1052-15	72.22	0.27	15.92	1.83	0.12	0.64	2.07	4.34	2.50	0.10	100.00	5.33	
	UA 1052-16	71.92	0.23	16.04	1.81	0.10	0.64	2.10	4.65	2.43	0.08	100.00	4.69	
	UA 1052-17	72.29	0.17	15.92	1.92	0.06	0.60	2.13	4.42	2.39	0.09	100.00	6.61	
	UA 1052-18	71.78	0.26	15.90	1.87	0.08	0.65	2.08	4.58	2.65	0.14	100.00	8.34	
	UA 1052-19	71.91	0.31	15.83	1.90	0.08	0.69	2.20	4.62	2.41	0.05	100.00	5.94	
	UA 1053-1	72.35	0.24	16.08	1.81	0.04	0.59	2.08	4.35	2.39	0.06	100.00	5.52	Sept. 26 2005
	UA 1053-2	72.62	0.20	15.69	1.77	0.02	0.66	2.03	4.49	2.41	0.10	100.00	10.12	
	UA 1053-3	72.34	0.15	15.89	1.69	0.08	0.67	2.05	4.57	2.49	0.07	100.00	4.55	
	UA 1053-4	72.37	0.20	15.87	1.86	0.08	0.59	2.02	4.49	2.48	0.05	100.00	4.99	
	UA 1053-5	72.32	0.29	15.81	1.92	0.03	0.59	2.03	4.45	2.53	0.05	100.00	5.95	
	UA 1053-6	72.25	0.28	15.80	1.84	0.03	0.61	2.11	4.59	2.40	0.09	100.00	4.85	
	UA 1053-7	72.55	0.32	15.81	1.78	0.09	0.57	1.99	4.44	2.40	0.04	100.00	4.15	
	UA 1053-8	71.97	0.28	15.84	1.96	0.09	0.66	2.29	4.37	2.43	0.11	100.00	3.84	

UA 1053-9	72.05	0.22	16.01	1.89	0.05	0.62	2.12	4.46	2.45	0.13	100.00	8.85	
UA 1053-10	72.04	0.21	16.06	1.93	0.11	0.67	2.15	4.42	2.36	0.04	100.00	4.98	
UA 1053-12	71.86	0.26	16.12	1.85	0.11	0.57	2.14	4.47	2.48	0.15	100.00	6.21	
UA 1053-13	72.30	0.28	15.74	1.75	0.10	0.62	2.22	4.36	2.48	0.15	100.00	6.21	
UA 1053-14	71.92	0.41	15.83	1.89	0.07	0.65	2.04	4.61	2.49	0.08	100.00	4.52	
UA 1053-15	71.89	0.29	16.04	1.85	0.11	0.69	2.12	4.57	2.36	0.08	100.00	4.51	
UA 1053-16	72.26	0.17	15.96	1.84	0.09	0.71	2.12	4.25	2.52	0.07	100.00	5.68	
UA 1053-17	71.82	0.29	16.01	1.98	0.06	0.67	2.18	4.48	2.44	0.07	100.00	5.74	
UA 1053-18	72.37	0.31	15.85	1.83	0.03	0.60	2.05	4.42	2.46	0.07	100.00	5.45	
UA 1053-19	72.47	0.27	15.90	1.82	0.12	0.62	2.16	4.21	2.41	0.03	100.00	4.85	
UA 1053-20	72.28	0.23	15.51	1.90	0.13	0.68	2.09	4.67	2.49	0.03	100.00	2.34	
UA 1054-1	72.29	0.36	15.65	1.86	0.04	0.63	2.16	4.60	2.36	0.05	100.00	4.09	Sept. 26 2005
UA 1054-2	72.28	0.24	16.10	1.84	0.09	0.65	2.11	4.19	2.42	0.06	100.00	5.46	
UA 1054-3	72.41	0.19	16.04	1.73	0.09	0.63	2.18	4.32	2.37	0.03	100.00	5.48	
UA 1054-4	72.61	0.21	15.83	1.80	0.05	0.60	2.24	4.27	2.31	0.08	100.00	5.08	
UA 1054-5	72.22	0.39	15.84	1.78	0.03	0.63	2.10	4.55	2.39	0.06	100.00	5.13	
UA 1054-6	72.38	0.18	15.88	1.78	0.09	0.58	2.13	4.52	2.40	0.06	100.00	3.87	
UA 1054-7	72.72	0.24	15.77	1.81	0.11	0.64	2.12	4.21	2.36	0.03	100.00	5.33	
UA 1054-8	72.20	0.32	15.81	1.82	0.10	0.68	2.17	4.35	2.47	0.09	100.00	5.50	
UA 1054-9	72.51	0.15	15.88	1.75	0.10	0.58	1.95	4.69	2.35	0.03	100.00	5.18	
UA 1054-10	72.14	0.21	15.80	1.87	0.07	0.67	2.17	4.61	2.41	0.04	100.00	4.63	
UA 1054-11	72.56	0.08	15.88	1.71	0.13	0.64	2.16	4.32	2.47	0.06	100.00	5.31	
UA 1054-12	72.45	0.19	15.55	1.77	0.10	0.65	2.22	4.54	2.45	0.08	100.00	5.64	
UA 1054-13	72.00	0.28	15.88	1.82	0.06	0.71	2.20	4.61	2.37	0.06	100.00	3.78	
UA 1054-14	72.21	0.33	15.87	1.73	0.01	0.65	2.06	4.72	2.37	0.05	100.00	4.65	
UA 1054-15	71.97	0.19	15.83	1.82	0.08	0.64	2.12	4.81	2.46	0.07	100.00	2.05	
UA 1054-16	72.32	0.27	15.64	1.74	0.06	0.63	2.08	4.73	2.43	0.10	100.00	2.23	
UA 1054-17	72.62	0.15	15.70	1.80	0.10	0.58	2.00	4.47	2.54	0.05	100.00	5.95	
UA 1054-18	72.28	0.22	15.88	1.82	0.03	0.68	2.07	4.55	2.43	0.04	100.00	4.88	
UA 1054-19	72.00	0.26	15.84	1.78	0.12	0.61	2.17	4.68	2.45	0.09	100.00	4.73	
UA 1054-20	72.54	0.22	15.84	1.86	0.08	0.61	2.03	4.28	2.47	0.06	100.00	7.70	
UA 1064-2	72.43	0.07	15.66	1.88	0.15	0.65	2.10	4.53	2.47	0.05	100.00	4.42	Sept. 26 2005
UA 1064-3	72.00	0.30	16.05	1.82	0.06	0.64	2.11	4.53	2.44	0.05	100.00	5.78	
UA 1064-4	72.09	0.17	15.85	1.90	0.05	0.59	2.16	4.53	2.55	0.10	100.00	4.82	

UA 1064-5	72.15	0.23	15.63	2.13	0.10	0.62	2.21	4.52	2.36	0.06	100.00	4.29	
UA 1064-6	72.25	0.26	15.66	1.89	0.08	0.64	2.09	4.63	2.42	0.07	100.00	4.81	
UA 1064-7	72.55	0.25	15.81	1.77	0.09	0.67	2.09	4.31	2.39	0.06	100.00	6.02	
UA 1064-8	72.63	0.24	15.76	1.81	0.10	0.56	2.07	4.32	2.42	0.09	100.00	6.64	
UA 1064-9	72.23	0.29	15.97	1.82	0.11	0.64	2.05	4.33	2.47	0.08	100.00	5.92	
UA 1064-10	72.41	0.24	15.73	1.79	0.07	0.62	2.04	4.60	2.43	0.08	100.00	5.72	
UA 1064-11	72.65	0.28	15.72	1.78	0.11	0.61	2.21	4.35	2.27	0.03	100.00	5.76	
UA 1064-12	72.37	0.18	15.92	1.86	0.08	0.60	2.01	4.46	2.47	0.07	100.00	5.08	
UA 1064-13	71.94	0.35	16.04	1.88	0.08	0.63	2.16	4.47	2.42	0.03	100.00	4.98	
UA 1064-14	72.21	0.20	16.04	1.81	0.10	0.59	2.13	4.38	2.46	0.08	100.00	6.07	
UA 1064-15	72.62	0.18	15.75	1.78	0.03	0.66	2.19	4.31	2.43	0.05	100.00	6.34	
UA 1064-16	71.71	0.19	16.16	2.01	0.04	0.66	2.28	4.45	2.45	0.06	100.00	4.75	
UA 1064-17	72.48	0.22	15.77	1.83	0.09	0.64	2.24	4.28	2.42	0.04	100.00	5.21	
UA 1064-18	72.13	0.17	16.06	1.86	0.12	0.62	1.97	4.72	2.29	0.05	100.00	3.99	
UA 1064-19	72.19	0.15	16.01	1.84	0.08	0.61	2.16	4.47	2.37	0.12	100.00	5.81	
UA 1064-20	72.37	0.25	15.97	1.81	0.11	0.59	2.11	4.25	2.49	0.05	100.00	4.91	
UA 1078-1	71.99	0.30	15.86	1.87	0.08	0.64	2.14	4.60	2.46	0.06	100.00	1.61	Sept. 26 2005
UA 1078-2	72.44	0.32	15.71	1.88	0.07	0.60	2.14	4.31	2.45	0.07	100.00	5.06	
UA 1078-3	71.98	0.30	15.71	1.77	0.08	0.66	2.15	4.80	2.48	0.07	100.00	3.73	
UA 1078-4	72.39	0.18	15.87	1.92	0.10	0.60	2.14	4.33	2.41	0.06	100.00	5.14	
UA 1078-5	72.63	0.35	15.63	1.89	0.04	0.55	2.09	4.44	2.29	0.09	100.00	5.88	
UA 1078-6	72.35	0.09	15.79	1.75	0.09	0.60	2.18	4.60	2.46	0.09	100.00	4.95	
UA 1078-7	72.24	0.20	15.86	1.78	0.08	0.66	2.16	4.49	2.47	0.06	100.00	6.24	
UA 1078-8	72.36	0.19	15.79	1.90	0.11	0.57	2.10	4.49	2.39	0.09	100.00	3.86	
UA 1078-9	72.37	0.19	15.89	1.78	0.11	0.60	2.07	4.48	2.41	0.09	100.00	5.65	
UA 1078-10	71.78	0.27	16.29	1.96	0.05	0.59	2.13	4.47	2.40	0.06	100.00	6.17	
UA 1078-11	72.82	0.33	15.45	1.91	0.04	0.58	2.04	4.36	2.41	0.05	100.00	7.15	
UA 1078-12	72.20	0.18	15.91	1.90	0.08	0.62	2.11	4.39	2.50	0.09	100.00	7.37	
UA 1078-13	72.19	0.24	15.68	1.84	0.12	0.57	2.19	4.67	2.42	0.09	100.00	5.34	
UA 1078-14	72.52	0.14	15.73	1.82	0.09	0.59	2.14	4.51	2.40	0.06	100.00	4.92	
UA 1078-15	72.30	0.14	15.77	2.11	0.05	0.58	2.04	4.52	2.45	0.05	100.00	5.96	
UA 1078-16	72.30	0.18	15.90	1.91	0.07	0.60	2.07	4.52	2.40	0.05	100.00	3.47	
UA 1078-18	72.75	0.26	15.81	1.78	0.08	0.53	2.14	4.15	2.43	0.07	100.00	6.21	
UA 1078-19	72.84	0.25	15.94	1.73	0.04	0.54	1.96	4.27	2.36	0.06	100.00	5.57	

UA 1078-20	72.54	0.22	15.67	1.87	0.10	0.62	2.13	4.37	2.46	0.01	100.00	5.77	
UA 1092-1	72.52	0.35	15.93	1.86	0.05	0.61	2.10	4.17	2.35	0.04	100.00	5.95	Sept. 26 2005
UA 1092-2	71.93	0.33	16.02	1.83	0.06	0.65	2.27	4.58	2.30	0.04	100.00	5.98	
UA 1092-3	71.99	0.24	16.11	1.94	0.11	0.61	2.14	4.32	2.45	0.10	100.00	9.06	
UA 1092-4	72.25	0.21	15.98	1.98	0.15	0.63	1.97	4.33	2.39	0.09	100.00	5.07	
UA 1092-5	72.33	0.17	15.89	1.89	0.12	0.58	2.08	4.43	2.42	0.08	100.00	5.56	
UA 1092-6	72.21	0.30	15.86	1.98	0.07	0.57	2.18	4.24	2.54	0.04	100.00	6.30	
UA 1092-7	72.57	0.09	15.94	1.91	0.00	0.59	2.35	4.18	2.38	0.00	100.00	4.89	
UA 1092-8	72.17	0.29	15.74	2.04	0.14	0.47	2.11	4.51	2.44	0.08	100.00	3.93	
UA 1092-9	72.55	0.18	15.91	1.76	0.05	0.60	1.98	4.48	2.42	0.06	100.00	5.42	
UA 1092-10	72.14	0.18	16.00	1.94	0.06	0.52	2.17	4.33	2.55	0.10	100.00	5.58	
UA 1092-11	72.32	0.30	15.98	1.86	0.13	0.58	2.04	4.31	2.46	0.02	100.00	4.63	
UA 1092-12	72.40	0.29	15.65	1.88	0.08	0.56	2.06	4.50	2.53	0.06	100.00	4.79	
UA 1092-13	72.24	0.33	15.98	1.85	0.11	0.59	2.06	4.34	2.46	0.05	100.00	5.01	
UA 1092-14	72.08	0.24	15.98	1.88	0.12	0.61	2.07	4.51	2.45	0.07	100.00	4.89	
UA 1092-15	72.27	0.19	16.08	1.93	0.04	0.60	2.21	4.24	2.41	0.03	100.00	4.71	
UA 1092-16	72.57	0.09	16.09	1.84	0.07	0.64	2.03	4.28	2.36	0.04	100.00	4.47	
UA 1092-17	72.14	0.18	15.96	1.95	0.06	0.56	2.17	4.62	2.32	0.03	100.00	5.24	
UA 1092-18	72.14	0.18	16.16	1.95	0.07	0.55	2.00	4.57	2.30	0.07	100.00	5.26	
UA 1093-1	71.95	0.24	16.19	1.81	0.09	0.69	2.11	4.55	2.31	0.06	100.00	5.26	Sept. 26 2005
UA 1093-2	72.15	0.36	15.86	1.75	0.03	0.61	2.16	4.54	2.45	0.08	100.00	4.97	
UA 1093-5	72.09	0.33	16.14	1.84	0.08	0.64	2.13	4.23	2.48	0.04	100.00	5.94	
UA 1093-6	72.64	0.21	15.81	1.70	0.09	0.65	2.18	4.30	2.36	0.07	100.00	6.32	
UA 1093-7	72.58	0.24	15.59	1.84	0.12	0.57	1.98	4.56	2.46	0.06	100.00	6.53	
UA 1093-9	72.31	0.16	15.94	1.83	0.10	0.60	2.18	4.60	2.23	0.05	100.00	4.94	
UA 1093-10	72.11	0.28	15.89	1.89	0.08	0.58	2.08	4.65	2.41	0.03	100.00	4.22	
UA 1093-11	72.33	0.35	15.82	1.88	0.13	0.60	1.98	4.43	2.41	0.07	100.00	6.09	
UA 1093-12	71.86	0.28	16.16	1.86	0.10	0.69	2.12	4.47	2.38	0.09	100.00	5.48	
UA 1093-13	72.08	0.24	15.95	1.78	0.07	0.61	2.18	4.54	2.47	0.09	100.00	5.66	
UA 1093-14	71.98	0.15	15.83	1.92	0.08	0.65	2.22	4.56	2.56	0.05	100.00	2.56	
UA 1093-15	72.13	0.31	16.08	1.85	0.13	0.60	2.11	4.42	2.36	0.02	100.00	5.65	
UA 1093-16	72.71	0.16	15.66	1.87	0.02	0.61	2.15	4.41	2.33	0.08	100.00	2.88	
UA 1093-17	72.20	0.20	15.89	1.91	0.10	0.68	2.15	4.37	2.46	0.06	100.00	5.96	
UA 1093-18	71.89	0.36	15.99	1.95	0.09	0.64	2.17	4.42	2.45	0.05	100.00	6.19	

UA 1093-19	72.40	0.23	15.96	1.72	0.10	0.52	2.17	4.50	2.35	0.06	100.00	5.39	
UA 1093-20	72.09	0.29	16.12	1.85	0.08	0.64	2.02	4.43	2.43	0.05	100.00	4.15	
UA 1094-1	72.43	0.26	15.74	1.77	0.04	0.61	2.15	4.56	2.37	0.08	100.00	4.39	Sept. 26 2005
UA 1094-2	72.41	0.21	15.99	1.81	0.10	0.66	1.99	4.27	2.48	0.07	100.00	6.05	
UA 1094-3	72.07	0.37	15.92	1.83	0.08	0.59	2.21	4.42	2.45	0.07	100.00	5.99	
UA 1094-4	72.41	0.25	15.87	1.84	0.01	0.65	2.12	4.37	2.40	0.07	100.00	5.50	
UA 1094-5	72.41	0.16	16.01	1.62	0.11	0.62	2.02	4.55	2.41	0.10	100.00	3.60	
UA 1094-6	71.81	0.39	16.41	1.88	0.12	0.59	2.00	4.30	2.41	0.08	100.00	7.06	
UA 1094-8	71.97	0.26	16.16	1.79	0.08	0.65	2.10	4.41	2.49	0.09	100.00	6.14	
UA 1094-9	72.12	0.21	16.02	1.80	0.07	0.66	2.04	4.47	2.53	0.07	100.00	5.61	
UA 1094-10	71.58	0.31	16.33	1.87	0.10	0.66	2.11	4.47	2.52	0.04	100.00	6.31	
UA 1094-11	71.91	0.34	16.18	1.83	0.06	0.65	2.13	4.49	2.35	0.06	100.00	5.15	
UA 1094-12	72.37	0.18	15.88	1.83	0.10	0.62	2.16	4.42	2.38	0.05	100.00	6.02	
UA 1094-13	72.41	0.12	16.02	1.81	0.03	0.64	2.03	4.54	2.32	0.09	100.00	3.68	
UA 1094-14	72.29	0.23	15.88	1.82	0.06	0.63	2.15	4.47	2.42	0.06	100.00	5.42	
UA 1094-15	72.59	0.36	15.78	1.67	0.10	0.67	2.03	4.37	2.36	0.07	100.00	4.24	
UA 1094-16	72.14	0.38	15.76	1.78	0.00	0.64	2.02	4.74	2.46	0.08	100.00	2.90	
UA 1094-17	72.22	0.26	15.58	1.94	0.13	0.59	2.12	4.63	2.46	0.05	100.00	1.28	
UA 1094-18	72.23	0.28	15.87	1.76	0.08	0.55	2.27	4.63	2.23	0.10	100.00	4.78	
UA 1094-19	72.20	0.28	15.55	1.91	0.06	0.63	2.05	4.81	2.44	0.07	100.00	1.60	
UA 1094-20	72.03	0.13	16.07	1.81	0.08	0.70	2.08	4.63	2.40	0.08	100.00	3.50	
UA 1095-1	72.55	0.20	15.85	1.81	0.07	0.67	2.10	4.19	2.47	0.10	100.00	5.26	Sept. 26 2005
UA 1095-2	72.34	0.14	15.90	1.72	0.03	0.61	2.06	4.67	2.46	0.07	100.00	6.42	
UA 1095-3	72.09	0.23	15.86	1.81	0.08	0.65	2.10	4.62	2.49	0.06	100.00	5.45	
UA 1095-4	72.16	0.19	15.97	1.78	0.09	0.63	2.06	4.59	2.48	0.05	100.00	5.15	
UA 1095-5	71.82	0.27	15.98	1.75	0.09	0.70	2.18	4.76	2.35	0.10	100.00	2.17	
UA 1095-6	72.34	0.18	15.91	1.76	0.09	0.70	1.99	4.57	2.38	0.07	100.00	4.47	
UA 1095-8	72.39	0.19	15.82	1.80	0.09	0.57	2.05	4.60	2.44	0.05	100.00	4.94	
UA 1095-9	72.40	0.33	15.70	1.82	0.06	0.71	2.11	4.44	2.33	0.11	100.00	5.26	
UA 1095-10	72.04	0.21	15.95	1.66	0.06	0.73	1.99	4.83	2.45	0.08	100.00	5.43	
UA 1095-11	72.62	0.08	15.55	1.78	0.09	0.67	2.08	4.68	2.41	0.04	100.00	4.32	
UA 1095-12	71.97	0.30	15.82	1.75	0.06	0.62	2.17	4.74	2.52	0.05	100.00	2.32	
UA 1095-13	72.19	0.23	15.88	1.80	0.08	0.62	2.06	4.62	2.44	0.08	100.00	3.85	
UA 1095-14	71.93	0.34	15.96	1.86	0.09	0.62	2.14	4.66	2.35	0.07	100.00	4.06	

UA 1095-15	72.45	0.25	15.72	1.77	0.08	0.68	2.06	4.51	2.43	0.05	100.00	4.86	
UA 1095-16	72.05	0.23	15.96	1.92	0.05	0.60	2.09	4.60	2.48	0.04	100.00	2.80	
UA 1095-17	72.26	0.24	15.81	1.81	0.08	0.70	2.15	4.52	2.34	0.09	100.00	4.16	
UA 1095-18	72.25	0.36	15.72	1.87	0.10	0.60	2.12	4.44	2.47	0.06	100.00	5.65	
UA 1095-19	72.68	0.31	15.70	1.83	0.05	0.69	1.94	4.23	2.52	0.04	100.00	5.56	
UA 1095-20	71.82	0.27	16.13	1.77	0.09	0.69	2.07	4.62	2.45	0.10	100.00	3.72	
ut1878-2	72.56	0.18	15.86	1.71	0.08	0.58	1.98	4.57	2.41	0.07	100.00	5.84	Aug. 1 2004
ut1878-3	72.45	0.35	15.82	1.80	0.09	0.56	2.05	4.34	2.42	0.12	100.00	5.90	
ut1878-4	72.20	0.15	15.94	1.84	0.10	0.60	2.09	4.57	2.48	0.02	100.00	7.01	
ut1878-5	72.40	0.15	15.97	1.81	0.09	0.56	2.08	4.43	2.43	0.08	100.00	5.31	
ut1878-7	72.32	0.19	16.03	1.72	0.05	0.53	2.11	4.54	2.41	0.09	100.00	5.45	
ut1878-8	72.40	0.14	15.92	1.84	0.06	0.58	2.01	4.58	2.44	0.02	100.00	5.47	
ut1878-13	72.24	0.21	16.09	1.87	0.07	0.61	2.02	4.47	2.37	0.05	100.00	5.22	
ut1878-14	72.08	0.26	15.97	1.80	0.05	0.56	2.09	4.64	2.45	0.10	100.00	6.02	
ut1878-15	72.34	0.15	15.98	1.82	0.09	0.61	2.13	4.35	2.49	0.02	100.00	6.35	
ut1878-16	72.17	0.12	16.14	1.92	0.10	0.61	2.15	4.37	2.42	0.00	100.00	5.64	
ut1878-17	72.05	0.28	15.89	1.79	0.05	0.62	2.11	4.77	2.39	0.05	100.00	5.90	
ut1878-18	72.13	0.14	16.03	1.86	0.09	0.50	2.23	4.53	2.46	0.03	100.00	7.39	
ut1878-20	72.42	0.25	15.87	1.82	0.08	0.57	2.13	4.33	2.46	0.06	100.00	5.97	
ut1878-21	72.29	0.09	16.10	1.88	0.05	0.52	1.99	4.49	2.60	0.00	100.00	6.91	
ut1878-22	72.73	0.18	15.72	1.90	0.07	0.57	2.04	4.34	2.39	0.05	100.00	6.68	
ut1878-23	72.28	0.22	15.99	1.83	0.02	0.52	2.10	4.61	2.40	0.04	100.00	5.25	
ut1878-26	72.09	0.27	16.12	1.73	0.08	0.62	2.02	4.53	2.46	0.08	100.00	6.14	
ut1878-28	72.38	0.10	15.86	1.89	0.00	0.52	2.04	4.73	2.45	0.03	100.00	6.42	
ut1878-29	72.56	0.21	15.71	1.88	0.05	0.57	2.01	4.51	2.46	0.07	100.00	5.11	
ut1878-30	71.48	0.30	16.10	1.92	0.04	0.59	2.16	4.73	2.62	0.06	100.00	3.54	
ut1878-1	72.51	0.30	15.56	1.77	0.03	0.57	2.01	4.68	2.45	0.12	100.00	5.15	Mar. 16 2005
ut1878-2	72.21	0.22	15.84	1.64	0.01	0.61	2.17	4.77	2.50	0.02	100.00	5.74	
ut1878-3	72.31	0.25	15.73	1.77	0.10	0.56	2.12	4.67	2.46	0.02	100.00	5.54	
ut1878-4	72.05	0.21	15.69	1.72	0.04	0.57	2.12	5.08	2.51	0.00	100.00	4.87	
ut1878-5	72.72	0.23	15.32	1.78	0.04	0.55	2.15	4.76	2.40	0.04	100.00	4.04	
ut1878-6	72.37	0.23	15.63	1.72	0.06	0.54	2.08	4.77	2.52	0.09	100.00	4.13	
ut1878-7	72.66	0.14	15.69	1.70	0.05	0.49	2.06	4.72	2.46	0.03	100.00	4.27	
ut1878-8	72.30	0.27	15.72	1.86	0.10	0.54	2.06	4.68	2.43	0.03	100.00	6.16	

ut1878-9	72.32	0.15	15.36	1.78	0.10	0.59	2.18	5.01	2.50	0.01	100.00	4.85	
ut1878-10	72.61	0.31	15.46	1.82	0.08	0.49	2.12	4.61	2.48	0.01	100.00	4.94	
ut1878-11	72.10	0.28	15.89	1.82	0.10	0.64	2.11	4.38	2.59	0.09	100.00	5.58	
ut1878-12	72.38	0.21	15.81	1.76	0.05	0.57	2.14	4.51	2.54	0.03	100.00	4.40	
ut1878-14	72.79	0.28	15.19	1.74	0.03	0.54	2.11	4.75	2.46	0.12	100.00	5.74	
ut1878-15	72.79	0.10	15.06	1.77	0.11	0.52	2.16	4.93	2.47	0.10	100.00	5.14	
ut1878-16	71.93	0.21	15.98	1.64	0.09	0.58	2.21	4.83	2.48	0.05	100.00	7.23	
ut1878-17	72.24	0.06	16.00	1.62	0.12	0.50	2.16	4.78	2.44	0.08	100.00	5.52	
ut1878-18	72.43	0.21	15.73	1.78	0.03	0.56	2.08	4.70	2.48	0.00	100.00	5.64	
ut1878-19	72.15	0.23	15.84	1.78	0.05	0.56	2.09	4.74	2.48	0.08	100.00	4.75	
ut1878-20	72.79	0.29	15.44	1.66	0.07	0.58	1.96	4.70	2.46	0.05	100.00	5.82	
ut1880-1	72.14	0.19	16.00	1.90	0.02	0.57	2.12	4.55	2.49	0.03	100.00	5.34	Aug. 1 2004
ut1880-2	72.69	0.16	15.97	1.87	0.08	0.56	1.96	4.26	2.40	0.06	100.00	9.45	
ut1880-4	72.14	0.15	16.24	1.86	0.03	0.61	2.02	4.56	2.39	0.01	100.00	6.47	
ut1880-5	72.42	0.08	16.07	1.89	0.06	0.57	1.95	4.42	2.45	0.10	100.00	6.62	
ut1880-7	71.88	0.24	15.94	2.02	0.04	0.54	2.14	4.72	2.46	0.03	100.00	4.58	
ut1880-8	71.68	0.29	16.13	1.83	0.03	0.60	2.06	4.90	2.42	0.05	100.00	3.47	
ut1880-10	72.25	0.30	15.97	1.70	0.07	0.59	2.04	4.55	2.44	0.08	100.00	6.34	
ut1880-11	72.46	0.16	15.81	1.85	0.06	0.51	2.01	4.55	2.43	0.16	100.00	5.66	
ut1880-13	72.35	0.20	15.93	1.74	0.04	0.56	2.07	4.66	2.39	0.05	100.00	5.99	
ut1880-14	72.05	0.15	15.95	1.79	0.10	0.63	2.03	4.71	2.51	0.07	100.00	5.64	
ut1880-15	72.27	0.36	16.00	1.83	0.08	0.56	2.03	4.38	2.49	0.00	100.00	6.13	
ut1880-17	72.07	0.27	16.05	1.67	0.09	0.60	2.08	4.69	2.48	0.01	100.00	5.34	
ut1880-18	71.79	0.19	15.99	1.83	0.08	0.62	2.12	4.93	2.38	0.08	100.00	3.16	
ut1880-20	71.99	0.27	16.14	1.82	0.05	0.56	2.03	4.57	2.46	0.11	100.00	7.34	
ut1880-21	72.63	0.18	15.67	1.86	0.10	0.59	1.94	4.42	2.54	0.07	100.00	5.96	
ut1880-1	72.39	0.26	15.50	1.77	0.06	0.58	2.13	4.76	2.48	0.07	100.00	3.26	Mar. 16 2005
ut1880-2	72.68	0.28	15.68	1.73	0.03	0.57	2.10	4.52	2.34	0.06	100.00	8.04	
ut1880-3	72.34	0.07	16.01	1.72	0.06	0.58	2.13	4.65	2.41	0.03	100.00	7.45	
ut1880-4	72.48	0.22	15.40	1.83	0.11	0.60	2.08	4.67	2.51	0.09	100.00	4.84	
ut1880-5	73.13	0.23	15.16	1.68	0.09	0.60	2.06	4.61	2.38	0.06	100.00	4.83	
ut1880-6	72.63	0.21	15.36	1.69	0.13	0.58	2.05	4.80	2.47	0.08	100.00	4.35	
ut1880-8	72.04	0.24	16.10	1.73	0.05	0.57	2.05	4.66	2.52	0.03	100.00	7.30	
ut1880-9	73.04	0.06	15.47	1.65	0.09	0.57	2.04	4.66	2.41	0.00	100.00	4.77	

ut1880-10	72.56	0.15	15.65	1.85	0.06	0.51	2.14	4.48	2.51	0.10	100.00	4.38	
ut1880-11	72.82	0.11	15.69	1.61	0.09	0.60	2.13	4.43	2.50	0.01	100.00	6.39	
ut1880-12	72.63	0.15	15.94	1.67	0.09	0.51	2.00	4.60	2.36	0.05	100.00	3.49	
ut1880-13	72.90	0.16	15.27	1.66	0.08	0.53	2.09	4.80	2.45	0.06	100.00	4.90	
ut1880-14	72.53	0.25	15.60	1.65	0.04	0.59	2.00	4.95	2.38	0.01	100.00	3.08	
ut1880-15	72.41	0.15	15.83	1.70	0.05	0.63	2.10	4.66	2.42	0.04	100.00	5.39	
ut1880-16	72.37	0.23	15.87	1.66	0.06	0.55	2.04	4.74	2.44	0.05	100.00	5.43	
ut1880-17	72.86	0.23	15.61	1.69	0.09	0.49	2.07	4.43	2.48	0.05	100.00	5.78	
ut1880-18	72.33	0.27	15.64	1.64	0.11	0.59	2.06	4.86	2.52	0.00	100.00	4.29	
ut1880-19	72.27	0.21	15.81	1.69	0.11	0.63	2.12	4.62	2.52	0.01	100.00	6.95	
ut1880-20	72.21	0.19	15.80	1.68	0.07	0.55	2.07	4.91	2.48	0.03	100.00	5.56	
ut1889-2	72.28	0.27	15.83	1.84	0.10	0.57	2.07	4.51	2.50	0.04	100.00	4.73	Aug. 1 2004
ut1889-3	71.94	0.17	16.04	1.84	0.10	0.55	2.10	4.69	2.52	0.05	100.00	5.53	
ut1889-4	72.44	0.24	15.78	1.94	0.05	0.53	1.99	4.57	2.44	0.03	100.00	2.36	
ut1889-5	71.71	0.11	16.23	1.96	0.04	0.52	2.01	4.93	2.47	0.01	100.00	9.17	
ut1889-7	72.17	0.15	15.87	1.78	0.03	0.56	2.09	4.75	2.54	0.06	100.00	5.64	
ut1889-8	72.01	0.05	16.13	1.81	0.09	0.62	2.10	4.53	2.59	0.07	100.00	5.40	
ut1889-9	72.00	0.18	15.94	1.93	0.03	0.65	2.07	4.66	2.48	0.06	100.00	5.87	
ut1889-10	72.31	0.14	15.87	1.83	0.08	0.57	2.03	4.62	2.49	0.06	100.00	6.17	
ut1889-11	72.57	0.13	15.83	1.87	0.05	0.65	2.00	4.40	2.42	0.08	100.00	5.15	
ut1889-12	72.28	0.34	15.53	1.91	0.01	0.59	2.10	4.60	2.53	0.10	100.00	5.31	
ut1889-13	72.19	0.29	15.79	1.81	0.03	0.62	2.04	4.64	2.51	0.08	100.00	5.81	
ut1889-14	72.11	0.20	15.96	1.91	0.06	0.59	2.08	4.60	2.43	0.07	100.00	5.11	
ut1889-16	72.28	0.08	15.90	1.74	0.06	0.57	2.04	4.74	2.51	0.08	100.00	5.42	
ut1889-17	71.88	0.20	16.05	1.97	0.12	0.54	2.11	4.61	2.42	0.10	100.00	4.95	
ut1889-18	72.41	0.15	15.89	1.69	0.03	0.57	2.16	4.58	2.50	0.02	100.00	6.43	
ut1889-19	72.34	0.14	15.75	2.01	0.07	0.56	2.13	4.49	2.46	0.05	100.00	5.33	
ut1889-20	71.90	0.19	16.08	1.83	0.04	0.55	2.15	4.75	2.46	0.05	100.00	2.91	
UT1667-1	72.00	0.23	16.06	1.77	0.09	0.68	2.01	4.56	2.43	0.17	100.00	6.05	Sept. 26 2005
UT1667-2	72.16	0.08	16.05	1.65	0.07	0.68	2.19	4.64	2.41	0.06	100.00	5.73	
UT1667-3	72.26	0.29	15.93	1.75	0.12	0.63	2.04	4.40	2.51	0.08	100.00	5.41	
UT1667-5	71.72	0.25	16.27	1.70	0.07	0.65	2.12	4.63	2.43	0.16	100.00	6.86	
UT1667-6	72.02	0.24	16.29	1.67	0.07	0.68	2.14	4.38	2.43	0.08	100.00	5.31	
UT1667-7	71.96	0.27	15.89	1.73	0.12	0.66	2.25	4.55	2.49	0.09	100.00	5.43	

UT1667-8	71.75	0.36	15.79	1.90	0.13	0.76	2.02	4.69	2.50	0.09	100.00	4.82	
UT1667-9	72.12	0.27	15.96	1.81	0.11	0.57	2.20	4.53	2.34	0.08	100.00	5.85	
UT1667-10	72.57	0.26	15.66	1.75	0.10	0.62	2.00	4.44	2.54	0.07	100.00	4.61	
UT1667-11	72.36	0.24	16.18	1.67	0.11	0.59	1.95	4.34	2.42	0.14	100.00	5.61	
UT1667-12	72.34	0.24	16.00	1.73	0.06	0.58	2.15	4.36	2.45	0.09	100.00	5.64	
UT1667-13	71.94	0.25	15.87	1.80	0.07	0.66	2.16	4.63	2.44	0.17	100.00	5.39	
UT1667-14	71.80	0.26	16.29	1.68	0.06	0.63	2.05	4.62	2.51	0.09	100.00	3.52	
UT1667-15	71.91	0.31	16.31	1.68	0.07	0.71	2.14	4.42	2.42	0.04	100.00	5.19	
ut1667-1	73.05	0.12	15.21	1.84	0.08	0.51	1.94	4.78	2.42	0.06	100.00	1.63	Mar. 16 2005
ut1667-2	72.18	0.30	15.68	1.72	0.05	0.57	2.07	4.85	2.45	0.14	100.00	3.03	
ut1667-3	72.67	0.15	15.39	1.76	0.10	0.52	2.10	4.75	2.47	0.09	100.00	5.72	
ut1667-4	72.39	0.18	15.61	1.77	0.10	0.58	2.03	4.83	2.50	0.01	100.00	2.45	
ut1667-5	71.98	0.11	15.80	1.76	0.13	0.56	2.24	4.86	2.51	0.03	100.00	5.87	
ut1667-6	72.84	0.19	15.18	1.63	0.04	0.58	2.19	4.74	2.52	0.08	100.00	5.71	
ut1667-7	72.25	0.34	15.69	1.70	0.01	0.60	2.08	4.71	2.56	0.08	100.00	6.26	
ut1667-8	72.15	0.28	15.79	1.78	0.09	0.57	2.14	4.67	2.48	0.05	100.00	5.09	
ut1667-9	72.48	0.11	15.82	1.68	0.04	0.61	2.13	4.59	2.52	0.01	100.00	6.38	
ut1667-10	71.93	0.22	15.69	1.81	0.10	0.56	2.06	5.11	2.48	0.05	100.00	6.37	
ut1667-11	72.23	0.09	15.75	1.74	0.06	0.54	2.10	5.03	2.47	0.01	100.00	5.95	
ut1667-13	72.28	0.26	15.92	1.75	0.08	0.66	2.02	4.48	2.52	0.03	100.00	4.94	
ut1667-14	72.67	0.12	15.54	1.81	0.04	0.57	2.10	4.64	2.49	0.04	100.00	4.93	
ut1667-15	72.46	0.23	15.70	1.79	0.07	0.56	2.12	4.60	2.46	0.01	100.00	5.97	
ut1667-16	72.29	0.21	15.75	1.81	0.05	0.58	2.12	4.74	2.43	0.02	100.00	6.91	
ut1667-17	72.12	0.16	15.65	1.74	0.11	0.55	2.19	4.90	2.50	0.08	100.00	1.80	
ut1667-18	72.89	0.27	15.15	1.81	0.03	0.52	2.03	4.83	2.41	0.05	100.00	4.91	
ut1667-19	71.73	0.22	15.96	1.49	0.07	0.57	2.12	5.20	2.48	0.15	100.00	2.99	
ut1667-20	72.36	0.18	15.57	1.76	0.10	0.53	2.21	4.77	2.44	0.08	100.00	4.85	
UA1234-1	72.13	0.27	15.68	1.73	0.07	0.56	2.29	4.76	2.43	0.08	100.00	7.85	Sept. 27 2005
UA1234-2	71.83	0.28	15.76	1.77	0.11	0.53	2.27	4.76	2.63	0.07	100.00	8.15	
UA1234-4	72.08	0.26	15.82	1.59	0.04	0.58	2.13	4.94	2.48	0.07	100.00	4.03	
UA1234-5	72.06	0.25	15.72	1.67	0.08	0.59	2.21	4.80	2.55	0.08	100.00	6.73	
UA1234-6	72.57	0.22	15.81	1.71	0.06	0.61	2.18	4.37	2.41	0.05	100.00	6.28	
UA1234-7	71.61	0.22	15.89	1.81	0.06	0.61	2.21	4.82	2.64	0.14	100.00	9.04	
UA1234-10	72.35	0.22	15.65	1.80	0.07	0.58	2.21	4.60	2.46	0.07	100.00	6.29	

	UA1234-11	72.00	0.20	15.92	1.72	0.03	0.52	2.20	4.91	2.46	0.04	100.00	5.51	
	UA1234-12	71.50	0.27	15.96	1.81	0.14	0.63	2.11	5.04	2.48	0.05	100.00	9.50	
	UA1234-13	72.46	0.29	15.86	1.74	0.03	0.50	2.13	4.43	2.49	0.07	100.00	6.67	
	UA1234-15	71.94	0.19	15.93	1.76	0.14	0.59	2.22	4.57	2.56	0.09	100.00	6.38	
	UA1234-18	71.73	0.33	15.85	1.73	0.12	0.57	2.19	4.84	2.58	0.06	100.00	7.51	
	UA1234-19	72.36	0.26	15.93	1.70	0.05	0.62	2.24	4.29	2.46	0.09	100.00	9.34	
	UA1234-20	72.19	0.27	15.84	1.69	0.03	0.56	2.20	4.79	2.38	0.06	100.00	7.45	
	UT 1667-1	72.56	0.25	15.74	1.68	0.03	0.55	2.11	4.64	2.36	0.08	100.00	1.98	
	UT 1667-2	71.96	0.23	16.07	1.69	0.12	0.55	2.15	4.61	2.57	0.04	100.00	6.12	
	UT 1667-3	72.25	0.21	15.92	1.81	0.08	0.55	2.26	4.42	2.46	0.05	100.00	7.45	
	UT 1667-5	71.73	0.23	16.00	1.75	0.08	0.56	2.17	4.91	2.50	0.06	100.00	6.13	
	UT 1667-6	72.35	0.20	15.75	1.66	0.07	0.57	2.20	4.71	2.44	0.04	100.00	6.76	
	UT 1667-7	72.23	0.22	15.80	1.64	0.09	0.49	2.21	4.72	2.57	0.04	100.00	6.61	
	UT 1667-8	71.93	0.25	15.80	1.67	0.04	0.60	2.24	4.88	2.52	0.08	100.00	3.59	
	UT 1667-9	72.43	0.19	15.79	1.69	0.06	0.56	2.21	4.50	2.47	0.10	100.00	6.09	
	UT 1667-10	72.31	0.15	15.67	1.67	0.07	0.61	2.12	4.85	2.48	0.07	100.00	3.25	
	UT 1667-11	72.41	0.22	15.61	1.59	0.12	0.59	2.24	4.73	2.43	0.07	100.00	5.02	
	UT 1667-12	72.30	0.27	15.90	1.73	0.10	0.64	2.14	4.35	2.52	0.05	100.00	5.75	
	Average	72.26	0.23	15.85	1.80	0.08	0.60	2.11	4.56	2.45	0.06	100.00	5.32	
	SD	0.28	0.07	0.21	0.09	0.03	0.05	0.07	0.19	0.06	0.03	0.00	1.38	n =313
BT	ut1888-4	69.88	0.35	14.99	3.13	0.05	1.76	3.46	3.74	2.58	0.05	100.00	2.97	Aug. 1 2004
	UA 1080-3	68.84	0.45	15.03	3.33	0.10	2.09	3.86	3.78	2.48	0.02	100.00	1.80	Sept. 27 2005
	UA 1080-4	69.14	0.42	15.52	3.15	0.09	1.99	3.61	3.62	2.43	0.03	100.00	2.82	
	ut1884-12	69.03	0.33	14.73	3.08	0.06	2.13	3.85	3.94	2.77	0.07	100.00	1.90	Aug. 1 2004
	ut1884-13	68.79	0.33	14.72	3.39	0.01	2.76	3.66	3.79	2.57	0.00	100.00	3.21	
	AVERAGE	69.14	0.38	15.00	3.22	0.06	2.15	3.69	3.77	2.57	0.04	100.00	2.54	
	STDEV	0.44	0.06	0.32	0.14	0.04	0.37	0.17	0.11	0.13	0.03	0.00	0.65	n=5
	ut1884-1	78.33	0.04	12.55	0.81	0.08	0.20	0.89	3.55	3.46	0.10	100.00	5.66	
	ut1884-3	76.16	0.00	13.89	1.01	0.00	0.29	1.35	3.91	3.35	0.04	100.00	6.28	
	ut1884-4	76.39	0.11	13.55	1.08	0.07	0.30	1.34	3.89	3.24	0.03	100.00	5.48	
	ut1884-5	76.15	0.13	13.70	0.97	0.06	0.37	1.39	3.87	3.25	0.11	100.00	5.81	
	ut1884-6	76.03	0.16	14.20	0.94	0.04	0.30	1.37	3.64	3.32	0.00	100.00	6.10	
	ut1884-7	77.23	0.08	13.13	0.89	0.03	0.28	1.20	3.59	3.44	0.14	100.00	8.36	

ut1884-8	77.13	0.13	13.23	0.91	0.04	0.27	1.20	3.51	3.57	0.02	100.00	6.15	
ut1884-9	76.20	0.10	13.80	1.17	0.02	0.34	1.30	3.99	3.02	0.05	100.00	5.07	
ut1884-11	76.32	0.15	13.76	1.06	0.04	0.32	1.32	3.73	3.26	0.05	100.00	5.70	
ut1884-15	77.42	0.12	13.04	0.84	0.02	0.27	1.09	3.71	3.47	0.02	100.00	6.66	
ut1884-16	76.15	0.17	13.86	0.94	0.04	0.34	1.46	3.81	3.21	0.03	100.00	6.28	
ut1884-17	76.81	0.12	13.59	0.91	0.02	0.29	1.20	3.75	3.24	0.07	100.00	5.94	
ut1884-18	76.39	0.05	13.54	0.99	0.04	0.32	1.39	4.01	3.22	0.05	100.00	6.47	
ut1884-19	76.22	0.08	13.75	1.06	0.09	0.29	1.47	3.74	3.23	0.06	100.00	6.00	
ut1884-20	76.81	0.03	13.68	0.92	0.07	0.36	1.44	3.64	3.04	0.02	100.00	6.64	
ut1888-2	76.62	0.13	13.50	1.10	0.00	0.25	1.36	3.85	3.15	0.05	100.00	4.95	Aug. 1 2004
ut1888-3	78.02	0.21	12.52	0.98	0.07	0.24	1.05	3.41	3.44	0.08	100.00	5.26	
ut1888-5	76.45	0.03	13.75	1.09	0.01	0.26	1.38	3.87	3.09	0.08	100.00	5.84	
ut1888-6	76.64	0.01	13.83	1.05	0.05	0.26	1.40	3.56	3.17	0.02	100.00	5.55	
ut1888-7	76.26	0.10	13.66	1.09	0.02	0.30	1.41	3.85	3.27	0.04	100.00	6.83	
ut1888-8	76.55	0.08	13.77	0.94	0.01	0.32	1.50	3.78	3.01	0.05	100.00	4.88	
ut1888-9	76.99	0.01	13.60	1.04	0.00	0.28	1.43	3.65	2.96	0.04	100.00	5.17	
ut1888-10	76.52	0.05	13.64	1.09	0.02	0.29	1.43	3.90	3.02	0.03	100.00	4.86	
ut1888-11	76.32	0.07	13.77	1.05	0.01	0.38	1.42	3.91	3.01	0.06	100.00	4.94	
ut1888-12	76.32	0.11	13.67	1.03	0.01	0.32	1.38	3.99	3.12	0.06	100.00	5.07	
ut1888-13	76.86	0.23	13.38	1.00	0.06	0.29	1.31	3.72	3.14	0.00	100.00	4.97	
ut1888-14	76.65	0.15	13.50	1.17	0.04	0.29	1.46	3.62	3.12	0.00	100.00	4.76	
ut1888-15	76.52	0.00	13.64	1.08	0.00	0.29	1.38	3.78	3.19	0.13	100.00	5.58	
ut1888-16	75.84	0.11	14.00	1.18	0.06	0.29	1.53	3.70	3.23	0.05	100.00	9.36	
ut1888-17	76.45	0.05	13.71	0.99	0.01	0.32	1.38	3.89	3.12	0.08	100.00	5.79	
ut1888-18	76.74	0.10	13.61	1.11	0.02	0.27	1.27	3.62	3.23	0.02	100.00	6.67	
ut1888-20	76.92	0.02	13.60	0.95	0.08	0.29	1.27	3.49	3.33	0.04	100.00	7.90	
UT 1681-1	77.13	0.21	13.24	0.96	0.02	0.29	1.55	3.51	3.03	0.07	100.00	4.59	Sept. 27 2006
UT 1681-2	76.65	0.12	13.62	1.00	0.04	0.30	1.44	3.57	3.21	0.03	100.00	4.89	
UT 1681-3	76.33	0.18	13.52	0.90	0.06	0.26	1.44	4.03	3.12	0.16	100.00	4.02	
UT 1681-4	77.30	0.10	13.18	0.92	0.02	0.31	1.45	3.56	3.11	0.05	100.00	4.07	
UT 1681-6	77.09	0.06	13.40	0.90	0.10	0.28	1.52	3.52	3.10	0.04	100.00	4.17	
UT 1681-7	76.84	0.20	13.57	1.02	0.00	0.27	1.42	3.61	3.03	0.02	100.00	4.41	
UT 1681-8	77.00	0.08	13.52	0.96	0.05	0.28	1.40	3.61	3.06	0.04	100.00	4.21	
UT 1681-9	76.87	0.14	13.55	0.98	0.06	0.31	1.41	3.71	2.92	0.05	100.00	7.48	

UT 1681-10	76.92	0.10	13.57	1.05	0.02	0.35	1.27	3.41	3.29	0.02	100.00	6.78	
UT 1681-11	76.32	0.22	14.44	0.91	0.01	0.26	1.38	3.35	3.08	0.03	100.00	3.89	
UT 1681-12	77.25	0.08	13.44	0.98	0.00	0.25	1.44	3.55	2.99	0.03	100.00	4.58	
UT 1681-13	76.62	0.21	13.77	0.92	0.04	0.30	1.47	3.57	3.00	0.10	100.00	4.55	
UT 1681-14	76.90	0.15	13.31	1.07	0.05	0.32	1.44	3.70	3.04	0.03	100.00	2.99	
UT 1681-15	76.35	0.30	13.57	1.17	0.01	0.36	1.59	3.65	2.98	0.02	100.00	3.94	
UT 1681-16	77.20	0.06	13.34	1.03	0.04	0.32	1.43	3.41	3.14	0.05	100.00	4.97	
UT 1681-17	76.51	0.23	13.30	0.98	0.00	0.31	1.52	3.88	3.16	0.11	100.00	4.37	
UT 1681-18	77.05	0.06	13.51	0.96	0.05	0.23	1.39	3.61	3.05	0.09	100.00	4.53	
UT 1681-19	77.13	0.19	13.44	0.98	0.00	0.31	1.40	3.61	2.92	0.03	100.00	4.08	
UT 1681-20	77.07	0.09	13.56	0.96	0.04	0.29	1.38	3.51	3.08	0.01	100.00	4.38	
UA 1079-1	76.47	0.22	13.84	0.88	0.03	0.34	1.45	3.66	3.06	0.06	100.00	4.51	Sept. 27 2005
UA 1079-2	76.54	0.09	13.81	0.98	0.06	0.28	1.38	3.66	3.20	0.02	100.00	5.15	
UA 1079-3	76.82	0.10	13.42	0.92	0.04	0.26	1.41	3.81	3.17	0.05	100.00	4.31	
UA 1079-4	76.85	0.23	13.46	0.89	0.04	0.26	1.39	3.62	3.21	0.04	100.00	6.01	
UA 1079-5	77.07	0.15	13.43	1.01	0.05	0.27	1.40	3.55	3.06	0.01	100.00	4.55	
UA 1079-6	76.98	0.04	13.63	0.91	0.06	0.33	1.43	3.45	3.11	0.05	100.00	5.61	
UA 1079-7	77.05	0.21	13.24	0.90	0.00	0.31	1.35	3.73	3.18	0.04	100.00	5.52	
UA 1079-8	76.85	0.10	13.47	0.90	0.06	0.35	1.53	3.50	3.23	0.02	100.00	4.08	
UA 1079-9	76.93	0.19	13.31	0.91	0.05	0.28	1.39	3.54	3.31	0.09	100.00	9.26	
UA 1079-10	76.73	0.06	13.83	0.96	0.00	0.33	1.36	3.51	3.15	0.06	100.00	4.40	
UA 1079-11	76.54	0.12	13.79	0.80	0.02	0.36	1.43	3.78	3.10	0.05	100.00	5.90	
UA 1079-12	76.66	0.13	13.57	1.00	0.03	0.31	1.36	3.75	3.16	0.04	100.00	4.29	
UA 1079-13	78.19	0.26	12.57	0.83	0.08	0.19	1.00	3.42	3.40	0.05	100.00	5.59	
UA 1079-14	78.40	0.14	12.70	0.76	0.00	0.23	1.01	3.34	3.39	0.02	100.00	6.10	
UA 1079-15	76.60	0.26	13.82	0.90	0.00	0.27	1.42	3.51	3.16	0.07	100.00	6.81	
UA 1079-16	76.97	0.12	13.54	0.96	0.10	0.22	1.31	3.54	3.18	0.06	100.00	4.45	
UA 1079-18	76.57	0.17	14.09	0.94	0.04	0.32	1.32	3.50	3.02	0.04	100.00	2.83	
UA 1079-19	76.74	0.19	13.93	0.94	0.02	0.28	1.46	3.52	2.88	0.03	100.00	4.59	
UA 1079-20	76.53	0.23	13.85	1.02	0.04	0.33	1.44	3.64	2.91	0.02	100.00	4.54	
UA 1080-2	75.58	0.13	14.26	1.06	0.04	0.34	1.95	3.65	2.94	0.06	100.00	6.74	Sept. 27 2005
UA 1080-5	76.59	0.08	13.92	0.93	0.04	0.34	1.44	3.46	3.14	0.06	100.00	6.29	
UA 1080-6	76.60	0.27	13.70	1.03	0.05	0.25	1.45	3.44	3.15	0.05	100.00	5.87	
UA 1080-7	76.49	0.21	13.83	1.05	0.01	0.29	1.36	3.52	3.18	0.07	100.00	3.94	

UA 1080-8	77.07	0.07	13.52	0.90	0.02	0.28	1.37	3.53	3.18	0.05	100.00	6.22	
UA 1080-9	76.81	0.11	13.47	0.96	0.08	0.30	1.44	3.70	3.00	0.13	100.00	4.24	
UA 1080-10	76.72	0.10	13.56	1.05	0.01	0.32	1.40	3.66	3.10	0.05	100.00	4.31	
UA 1080-11	76.86	0.05	13.59	0.98	0.04	0.30	1.39	3.63	3.07	0.09	100.00	6.18	
UA 1080-12	76.76	0.18	13.50	1.02	0.03	0.28	1.44	3.56	3.17	0.05	100.00	4.61	
UA 1080-13	76.76	0.12	13.42	0.95	0.06	0.31	1.44	3.79	3.08	0.06	100.00	4.24	
UA 1080-14	76.53	0.23	13.74	0.93	0.08	0.33	1.37	3.60	3.17	0.03	100.00	3.53	
UA 1080-16	76.69	0.21	13.78	0.96	0.00	0.33	1.54	3.59	2.87	0.04	100.00	4.53	
UA 1080-17	76.66	0.16	13.81	0.94	0.06	0.27	1.53	3.67	2.85	0.06	100.00	4.35	
UA 1080-18	76.56	0.24	13.64	0.97	0.06	0.28	1.42	3.64	3.16	0.03	100.00	4.83	
UA 1080-19	76.66	0.24	13.58	1.02	0.06	0.33	1.43	3.51	3.13	0.04	100.00	4.85	
UA 1080-20	76.88	0.08	13.57	1.00	0.06	0.30	1.43	3.63	3.00	0.05	100.00	4.52	
UA 1081-1	77.03	0.20	13.35	0.96	0.11	0.32	1.40	3.41	3.15	0.07	100.00	8.45	Sept. 27 2005
UA 1081-2	76.90	0.06	13.47	1.00	0.00	0.32	1.36	3.73	3.06	0.09	100.00	5.95	
UA 1081-3	76.75	0.15	13.36	1.03	0.09	0.30	1.50	3.66	3.12	0.04	100.00	3.73	
UA 1081-4	76.83	0.14	13.61	0.96	0.00	0.28	1.38	3.67	3.10	0.03	100.00	4.04	
UA 1081-6	76.95	0.21	13.49	1.02	0.05	0.29	1.38	3.27	3.29	0.07	100.00	4.79	
UA 1081-7	76.88	0.15	13.59	1.03	0.08	0.25	1.38	3.52	3.07	0.05	100.00	4.10	
UA 1081-8	76.95	0.24	13.40	0.94	0.00	0.24	1.44	3.46	3.30	0.03	100.00	6.35	
UA 1081-9	76.80	0.11	13.49	0.97	0.02	0.31	1.33	3.64	3.28	0.05	100.00	5.66	
UA 1081-10	76.22	0.26	13.92	0.93	0.07	0.30	1.41	3.66	3.11	0.12	100.00	4.67	
UA 1081-11	77.13	0.11	13.43	0.96	0.00	0.31	1.42	3.51	3.06	0.06	100.00	8.85	
UA 1081-12	78.70	0.19	12.25	0.77	0.00	0.25	0.95	3.46	3.41	0.04	100.00	4.54	
UA 1081-13	77.11	0.18	13.58	0.95	0.02	0.30	1.30	3.37	3.14	0.04	100.00	4.76	
UA 1081-14	76.51	0.16	14.03	0.93	0.02	0.32	1.41	3.50	3.07	0.04	100.00	4.64	
UA 1081-15	76.62	0.21	13.50	1.06	0.02	0.34	1.44	3.67	3.08	0.06	100.00	6.04	
UA 1081-16	77.04	0.18	13.56	0.94	0.00	0.27	1.31	3.53	3.10	0.06	100.00	3.82	
UA 1081-17	76.60	0.26	13.50	0.97	0.06	0.26	1.46	3.66	3.15	0.07	100.00	4.22	
UA 1081-18	76.68	0.22	13.64	1.17	0.00	0.26	1.46	3.49	3.02	0.05	100.00	5.46	
UA 1081-19	77.05	0.27	13.28	0.91	0.04	0.30	1.41	3.54	3.17	0.02	100.00	3.57	
UA 1081-20	76.94	0.22	13.48	0.97	0.00	0.28	1.58	3.51	3.01	0.02	100.00	3.90	
UT1681-1	76.65	0.17	13.41	0.94	0.07	0.27	1.43	3.61	3.38	0.08	100.00	8.91	Sept. 27 2005
UT1681-2	76.68	0.12	13.41	1.06	0.01	0.32	1.46	3.80	3.09	0.05	100.00	5.75	
UT1681-3	76.57	0.14	13.63	0.85	0.00	0.31	1.53	3.82	3.11	0.04	100.00	7.24	

	UT1681-4	76.41	0.18	13.54	0.99	0.10	0.27	1.52	3.84	3.08	0.08	100.00	6.55	
	UT1681-5	76.91	0.20	13.26	0.95	0.07	0.31	1.31	3.71	3.26	0.03	100.00	4.97	
	UT1681-6	76.69	0.18	13.43	0.96	0.04	0.29	1.47	3.58	3.30	0.04	100.00	6.25	
	UT1681-7	76.44	0.19	13.45	0.95	0.05	0.30	1.42	3.93	3.25	0.04	100.00	4.97	
	UT1681-1	76.68	0.19	13.32	1.03	0.03	0.33	1.36	3.92	3.05	0.07	100.00	5.18	Nov. 29 2006
	UT1681-2	76.78	0.18	13.64	0.83	0.02	0.30	1.38	3.75	3.05	0.05	100.00	6.75	
	UT1681-3	76.62	0.16	13.76	1.01	0.00	0.30	1.43	3.61	3.10	0.01	100.00	5.07	
	UT1681-4	76.68	0.14	13.78	0.92	0.03	0.32	1.32	3.79	2.99	0.03	100.00	5.40	
	UT1681-5	76.47	0.09	13.73	0.91	0.06	0.28	1.35	3.86	3.22	0.04	100.00	5.27	
	UT1681-6	76.61	0.20	13.51	0.92	0.05	0.28	1.35	3.83	3.19	0.06	100.00	4.96	
	UT1681-7	76.95	0.12	13.57	0.94	0.03	0.30	1.27	3.76	3.04	0.02	100.00	5.10	
	UT1681-8	76.42	0.17	13.67	0.92	0.08	0.28	1.40	3.85	3.14	0.06	100.00	4.97	
	UT1681-9	76.88	0.15	13.64	0.89	0.04	0.27	1.40	3.56	3.16	0.01	100.00	6.15	
	UT1681-10	76.38	0.13	13.65	0.90	0.03	0.32	1.41	3.99	3.15	0.05	100.00	5.69	
	UT1681-11	76.82	0.21	13.27	0.89	0.04	0.30	1.28	3.86	3.26	0.07	100.00	4.80	
	UT1681-13	76.73	0.15	13.61	1.01	0.06	0.26	1.35	3.70	3.13	0.01	100.00	4.87	
	UT1681-14	76.81	0.14	13.35	0.98	0.02	0.28	1.32	3.89	3.16	0.05	100.00	5.37	
	UT1681-17	76.91	0.18	13.45	1.06	0.01	0.31	1.42	3.60	3.05	0.00	10[illegible]	6.80	
	UT1681-18	76.38	0.21	13.62	1.01	0.04	0.34	1.38	3.81	3.20	0.00	100.00	5.98	
	AVERAGE	76.76	0.14	13.55	0.97	0.04	0.30	1.39	3.66	3.14	0.05	100.00	5.36	
	STDEV	0.44	0.07	0.31	0.08	0.03	0.03	0.12	0.16	0.13	0.03	0.00	1.23	n=127
CC	**UT 1751-1**	75.44	0.27	13.79	1.42	0.01	0.37	1.78	3.87	3.05	0.00	100.00	4.62	Mar. 28 2006
	UT 1751-2	75.67	0.32	13.86	1.41	0.08	0.35	1.82	3.72	2.76	0.01	100.00	5.31	
	UT 1751-3	75.50	0.26	13.81	1.41	0.05	0.38	1.70	3.80	3.04	0.05	100.00	4.74	
	UT 1751-4	76.00	0.34	13.65	1.27	0.06	0.36	1.60	3.65	3.06	0.01	100.00	5.70	
	UT 1751-5	76.31	0.22	13.61	1.19	0.04	0.30	1.56	3.85	2.90	0.02	100.00	5.15	
	UT 1751-6	76.24	0.23	13.50	1.19	0.00	0.28	1.48	4.03	3.03	0.03	100.00	4.14	
	UT 1751-7	74.84	0.28	13.91	1.53	0.06	0.41	1.97	4.08	2.90	0.03	100.00	5.30	
	UT 1751-8	75.27	0.26	13.82	1.32	0.06	0.38	1.65	4.19	2.99	0.05	100.00	5.22	
	UT 1751-9	75.77	0.24	13.75	1.26	0.01	0.32	1.67	3.93	3.02	0.03	100.00	4.91	
	UT 1751-10	75.31	0.28	14.00	1.45	0.04	0.35	1.68	3.87	2.99	0.03	100.00	4.87	
	UT 1751-11	75.33	0.25	13.99	1.41	0.01	0.39	1.76	3.92	2.90	0.04	100.00	5.09	
	UT 1751-12	74.88	0.28	13.93	1.36	0.08	0.35	1.85	4.22	3.01	0.04	100.00	3.80	

UT 1751-13	75.27	0.21	14.05	1.34	0.05	0.38	1.82	3.91	2.96	0.02	100.00	4.20	
UT 1751-14	75.33	0.26	13.83	1.38	0.04	0.35	1.78	4.05	2.92	0.06	100.00	5.25	
UT 1751-15	75.41	0.28	13.86	1.35	0.04	0.38	1.62	4.07	2.96	0.03	100.00	4.88	
UT 1751-17	75.20	0.31	13.90	1.44	0.04	0.32	1.79	3.93	3.03	0.03	100.00	4.71	
UT1751-1	74.91	0.24	14.03	1.44	0.00	0.46	1.83	3.93	3.13	0.02	100.00	5.74	June 22 2006
UT1751-2	75.52	0.19	13.76	1.26	0.05	0.33	1.51	4.22	3.15	0.02	100.00	6.47	
UT1751-3	75.03	0.30	14.18	1.26	0.02	0.39	1.81	3.91	3.06	0.04	100.00	5.60	
UT1751-4	75.14	0.28	13.99	1.48	0.00	0.40	1.78	3.90	3.01	0.01	100.00	5.36	
UT1751-5	75.16	0.30	13.99	1.31	0.06	0.38	1.85	4.04	2.90	0.01	100.00	4.84	
UT1751-7	75.20	0.27	14.05	1.37	0.07	0.31	1.69	4.00	3.02	0.01	100.00	3.98	
UT1751-8	75.61	0.27	13.78	1.28	0.07	0.37	1.62	3.90	3.08	0.02	100.00	5.77	
UT1751-9	75.37	0.24	13.87	1.32	0.00	0.37	1.67	3.98	3.17	0.00	100.00	4.77	
UT1751-10	74.97	0.19	14.34	1.24	0.05	0.37	1.78	4.10	2.96	0.01	100.00	4.56	
UT1751-12	76.30	0.19	13.62	1.08	0.04	0.30	1.58	3.85	3.02	0.01	100.00	5.17	
UT1751-13	75.44	0.24	13.76	1.21	0.07	0.34	1.75	4.03	3.12	0.05	100.00	4.66	
UT1751-14	75.04	0.25	13.91	1.39	0.03	0.39	1.78	4.18	3.00	0.02	100.00	1.72	
UT1751-15	75.40	0.25	13.96	1.36	0.01	0.34	1.75	3.90	2.97	0.05	100.00	3.86	
ut1885-1	75.31	0.25	14.00	1.46	0.01	0.41	1.73	3.76	3.07	0.00	100.00	6.52	Aug. 1 2004
ut1885-3	74.72	0.15	14.03	1.50	0.02	0.42	1.85	4.26	3.00	0.06	100.00	2.20	
ut1885-5	75.02	0.22	13.99	1.47	0.03	0.31	1.71	4.14	3.13	0.00	100.00	4.07	
ut1885-6	74.88	0.17	14.15	1.47	0.03	0.39	1.70	4.10	3.01	0.08	100.00	4.15	
ut1885-10	74.94	0.36	13.99	1.59	0.00	0.34	1.68	3.95	3.14	0.00	100.00	4.75	
ut1885-11	75.73	0.20	13.83	1.28	0.02	0.29	1.56	4.03	3.05	0.00	100.00	6.08	
ut1885-12	74.78	0.32	14.12	1.55	0.07	0.39	1.78	3.90	3.00	0.08	100.00	5.95	
ut1885-13	75.00	0.23	13.97	1.44	0.07	0.38	1.83	4.04	3.03	0.01	100.00	5.72	
ut1885-16	75.05	0.25	14.11	1.43	0.02	0.39	1.77	4.06	2.92	0.00	100.00	5.46	
ut1885-17	74.75	0.21	14.31	1.58	0.02	0.36	1.68	3.97	3.07	0.05	100.00	5.79	
ut1885-19	73.90	0.42	14.50	1.84	0.02	0.44	1.85	3.76	3.18	0.10	100.00	6.33	
UT1885-1	75.00	0.25	14.01	1.42	0.02	0.38	1.79	3.92	3.16	0.04	100.00	7.47	June 22 2006
UT1885-2	75.36	0.28	13.76	1.43	0.06	0.33	1.68	4.10	2.98	0.02	100.00	5.32	
UT1885-4	75.46	0.24	14.05	1.34	0.00	0.39	1.70	3.79	3.00	0.04	100.00	5.11	
UT1885-5	75.35	0.29	13.82	1.39	0.00	0.31	1.75	3.95	3.10	0.03	100.00	5.24	
UT1885-6	75.53	0.18	13.96	1.21	0.00	0.33	1.67	4.11	2.96	0.04	100.00	4.68	
UT1885-7	75.63	0.28	13.75	1.25	0.06	0.35	1.65	4.02	2.98	0.04	100.00	3.74	

	UT1885-8	77.06	0.24	13.37	0.94	0.05	0.26	1.30	3.75	2.98	0.05	100.00	6.41	
	UT1885-9	75.02	0.22	14.03	1.29	0.10	0.38	1.82	4.05	3.05	0.03	100.00	5.00	
	UT1885-11	75.67	0.22	13.92	1.25	0.05	0.31	1.62	3.93	3.00	0.03	100.00	5.21	
	UT1885-13	75.98	0.23	13.73	1.26	0.01	0.29	1.58	3.77	3.08	0.07	100.00	4.95	
	UT1885-14	74.54	0.25	14.15	1.64	0.00	0.48	2.06	3.78	3.05	0.06	100.00	5.28	
	UT1885-15	76.07	0.23	13.50	1.29	0.07	0.33	1.52	3.87	3.09	0.04	100.00	4.75	
	UT1885-16	76.20	0.29	13.54	1.12	0.00	0.29	1.48	4.01	3.03	0.04	100.00	5.06	
	AVERAGE	75.36	0.25	13.91	1.36	0.04	0.36	1.71	3.96	3.02	0.03	100.00	5.01	
	STDEV	0.52	0.05	0.21	0.15	0.03	0.05	0.13	0.14	0.08	0.02	0.00	0.97	53
CV	**UA1082-1**	75.07	0.23	14.39	1.29	0.02	0.42	1.77	3.96	2.83	0.02	100.00	4.72	Mar. 28 2006
	UA1082-2	74.92	0.19	14.44	1.26	0.05	0.37	1.67	4.30	2.77	0.03	100.00	3.06	
	UA1082-3	74.82	0.24	14.58	1.29	0.10	0.40	1.67	4.13	2.76	0.02	100.00	3.27	
	UA1082-5	74.74	0.19	14.70	1.28	0.05	0.39	1.89	4.19	2.55	0.03	100.00	4.99	
	UA1082-6	74.65	0.18	14.56	1.42	0.00	0.45	1.92	4.00	2.75	0.06	100.00	9.49	
	UA1082-8	75.12	0.23	14.48	1.26	0.07	0.41	1.77	3.91	2.70	0.04	100.00	5.13	
	UA1082-9	74.95	0.27	14.44	1.29	0.07	0.47	1.90	4.00	2.59	0.02	100.00	5.92	
	UA1082-10	74.89	0.22	14.39	1.33	0.03	0.48	1.83	4.08	2.71	0.05	100.00	4.57	
	UA1082-11	75.39	0.25	14.30	1.23	0.04	0.41	1.59	4.16	2.62	0.01	100.00	4.11	
	UA1082-12	75.14	0.15	14.39	1.22	0.05	0.38	1.67	4.31	2.67	0.01	100.00	3.40	
	UA1082-13	74.47	0.16	14.84	1.42	0.03	0.43	1.95	3.98	2.68	0.06	100.00	4.80	
	UA1082-14	74.28	0.22	14.62	1.53	0.03	0.58	1.85	4.13	2.67	0.08	100.00	9.56	
	UA1082-16	74.89	0.25	14.42	1.27	0.07	0.45	1.84	4.05	2.71	0.05	100.00	5.18	
	UA1082-4	74.17	0.22	14.88	1.35	0.13	0.44	1.82	3.98	2.96	0.05	100.00	5.82	June 22 2006
	UA1082-5	74.41	0.22	15.00	1.25	0.08	0.37	1.89	4.16	2.55	0.06	100.00	4.11	
	UA1082-6	74.26	0.23	14.75	1.31	0.11	0.51	1.84	4.26	2.70	0.04	100.00	5.60	
	UA1082-7	74.62	0.24	14.80	1.35	0.05	0.44	1.87	3.90	2.71	0.03	100.00	6.59	
	UA1082-10	74.03	0.27	14.20	1.42	0.06	0.42	1.90	4.29	3.31	0.09	100.00	9.75	
	UA1082-11	74.83	0.20	14.21	1.39	0.06	0.37	1.74	4.36	2.81	0.01	100.00	4.63	
	UA1082-15	75.21	0.19	14.50	1.25	0.07	0.36	1.70	4.10	2.59	0.03	100.00	4.76	
	UA1082-16	74.47	0.19	14.77	1.45	0.08	0.42	1.82	4.03	2.72	0.04	100.00	5.49	
	UA1082-17	74.37	0.26	14.78	1.27	0.07	0.42	1.82	4.22	2.74	0.03	100.00	2.92	
	UA1082-18	74.58	0.20	14.70	1.38	0.02	0.41	1.74	4.18	2.74	0.04	100.00	5.31	
	AVERAGE	74.71	0.22	14.57	1.33	0.06	0.43	1.80	4.12	2.73	0.04	100.00	5.36	

	STDEV	0.36	0.03	0.22	0.08	0.03	0.05	0.09	0.13	0.16	0.02	0.00	1.92	n=23
CB_1	**ut1660**	74.28	0.30	14.55	1.37	0.06	0.38	1.97	4.15	2.90	0.03	100.00	5.94	Mar. 16 2005
	ut1660-1	73.87	0.24	14.97	1.37	0.02	0.49	1.93	4.17	2.87	0.07	100.00	7.12	
	ut1660-2	74.40	0.24	14.66	1.53	0.03	0.43	1.87	3.95	2.83	0.07	100.00	6.51	
	ut1660-3	74.51	0.09	14.47	1.23	0.07	0.45	1.94	4.25	2.96	0.04	100.00	6.58	
	ut1660-4	74.07	0.21	14.63	1.38	0.00	0.47	1.92	4.34	2.93	0.05	100.00	5.47	
	ut1660-7	74.84	0.19	14.23	1.38	0.00	0.42	1.81	4.32	2.75	0.07	100.00	4.30	
	ut1660-9	73.83	0.19	14.65	1.49	0.05	0.44	1.88	4.46	2.91	0.11	100.00	5.81	
	ut1660-10	75.33	0.00	14.28	1.32	0.03	0.42	1.83	3.97	2.78	0.04	100.00	5.16	
	ut1660-11	74.69	0.27	14.25	1.31	0.05	0.42	1.86	4.28	2.80	0.07	100.00	7.86	
	ut1660-12	73.88	0.12	15.25	1.27	0.10	0.39	1.85	4.16	2.94	0.04	100.00	5.89	
	ut1660-13	75.59	0.30	13.60	1.20	0.01	0.36	1.83	3.97	3.01	0.12	100.00	5.15	
	ut1660-14	74.19	0.24	14.59	1.41	0.08	0.41	1.78	4.28	2.93	0.09	100.00	5.39	
	ut1660-15	74.30	0.33	14.60	1.50	0.03	0.49	1.80	4.09	2.81	0.05	100.00	4.45	
	ut1660-16	74.59	0.21	14.47	1.31	0.02	0.41	1.84	4.27	2.87	0.00	100.00	4.02	
	ut1660-17	73.99	0.25	14.89	1.41	0.01	0.43	1.88	4.03	3.03	0.07	100.00	6.19	
	ut1660-18	74.63	0.27	14.19	1.43	0.05	0.46	1.85	4.13	2.95	0.04	100.00	5.67	
	ut1660-19	74.53	0.19	14.40	1.24	0.02	0.51	1.74	4.53	2.80	0.03	100.00	9.73	
	ut1660-20	74.24	0.16	14.38	1.50	0.07	0.38	1.88	4.52	2.81	0.05	100.00	4.72	
	UT 1660-1	74.54	0.18	14.65	1.42	0.00	0.45	1.90	3.92	2.83	0.10	100.00	8.20	Sept. 27 2006
	UT 1660-2	74.42	0.29	14.54	1.53	0.06	0.45	1.93	3.90	2.86	0.03	100.00	5.51	
	UT 1660-3	74.60	0.23	14.61	1.41	0.04	0.44	1.86	3.92	2.85	0.04	100.00	6.39	
	UT 1660-4	74.32	0.18	14.56	1.59	0.10	0.45	1.83	4.10	2.83	0.04	100.00	7.74	
	UT 1660-5	74.39	0.34	14.61	1.36	0.00	0.39	1.94	4.02	2.92	0.04	100.00	4.67	
	UT 1660-6	74.71	0.11	14.78	1.44	0.02	0.45	1.79	3.81	2.82	0.07	100.00	5.84	
	UT 1660-7	74.48	0.13	14.75	1.42	0.11	0.42	1.80	4.05	2.80	0.05	100.00	4.62	
	UT 1660-8	74.89	0.23	14.16	1.43	0.05	0.49	1.74	4.09	2.87	0.04	100.00	4.80	
	UT 1660-9	75.15	0.19	14.30	1.39	0.07	0.42	1.76	3.89	2.78	0.04	100.00	6.06	
	UT 1660-10	74.88	0.23	14.49	1.41	0.00	0.47	1.75	3.87	2.84	0.06	100.00	5.48	
	UT 1660-11	74.69	0.20	14.57	1.43	0.02	0.40	1.93	3.81	2.93	0.02	100.00	6.20	
	UT 1660-13	75.44	0.05	14.26	1.35	0.09	0.40	1.66	3.73	2.96	0.06	100.00	6.65	
	UT 1660-14	74.59	0.25	14.66	1.44	0.05	0.37	1.78	3.77	3.00	0.09	100.00	7.66	
	UT 1660-15	75.16	0.22	14.25	1.51	0.06	0.37	1.67	3.90	2.78	0.09	100.00	5.75	

UT 1660-16	74.66	0.23	14.39	1.39	0.09	0.43	1.80	4.08	2.89	0.03	100.00	5.15	
UT 1660-17	74.26	0.24	14.62	1.43	0.08	0.43	1.76	4.26	2.87	0.05	100.00	3.90	
UT 1660-18	74.54	0.21	14.51	1.42	0.04	0.40	1.91	4.09	2.86	0.03	100.00	4.81	
UT 1660-19	74.96	0.31	14.30	1.55	0.08	0.43	1.78	3.73	2.86	0.01	100.00	6.26	
UT1660-1	74.84	0.26	14.43	1.48	0.00	0.37	1.83	3.80	2.96	0.04	100.00	6.49	Apr. 27 2006
UT1660-2	74.16	0.24	14.73	1.40	0.06	0.42	1.90	4.21	2.82	0.07	100.00	7.92	
UT1660-3	74.28	0.25	14.84	1.39	0.06	0.46	1.86	4.02	2.77	0.06	100.00	4.69	
UT1660-4	74.54	0.19	14.54	1.39	0.06	0.44	1.77	4.23	2.83	0.00	100.00	6.88	
UT1660-5	75.00	0.24	14.50	1.35	0.05	0.37	1.74	3.91	2.82	0.02	100.00	5.51	
UT1660-6	75.06	0.24	14.35	1.37	0.03	0.46	1.76	4.00	2.66	0.05	100.00	4.70	
UT1660-7	74.69	0.29	14.51	1.27	0.06	0.42	1.85	4.09	2.79	0.03	100.00	5.23	
UT1660-8	74.70	0.23	14.46	1.40	0.03	0.43	1.71	4.12	2.91	0.02	100.00	5.35	
UT1660-9	74.47	0.22	14.65	1.41	0.04	0.47	1.75	4.08	2.88	0.04	100.00	5.88	
UT1660-10	74.31	0.18	14.66	1.51	0.06	0.41	1.91	4.19	2.72	0.05	100.00	1.70	
UT1660-11	74.77	0.24	14.41	1.40	0.05	0.46	1.78	4.12	2.72	0.04	100.00	3.98	
UT1660-12	74.58	0.16	14.52	1.24	0.07	0.48	1.79	4.13	2.94	0.09	100.00	4.44	
UT1660-1	74.76	0.25	14.46	1.30	0.05	0.43	1.90	3.90	2.89	0.06	100.00	6.28	June 22 2006
UT1660-2	74.16	0.22	14.80	1.39	0.10	0.45	1.93	4.04	2.90	0.01	100.00	5.93	
UT1660-3	74.54	0.19	14.91	1.35	0.02	0.43	1.80	3.72	3.00	0.04	100.00	5.81	
UT1660-4	74.60	0.24	14.76	1.28	0.00	0.39	1.85	3.90	2.96	0.02	100.00	5.80	
UT1660-5	74.68	0.26	14.72	1.23	0.05	0.39	1.80	3.91	2.91	0.06	100.00	6.15	
UT1660-6	75.04	0.24	14.41	1.15	0.04	0.34	1.61	4.00	3.16	0.02	100.00	7.17	
UT1660-7	74.59	0.27	14.67	1.43	0.08	0.42	1.78	3.96	2.81	0.01	100.00	6.37	
UT1660-8	74.41	0.18	14.68	1.33	0.11	0.42	1.88	4.07	2.86	0.05	100.00	6.70	
UT1660-10	74.37	0.23	14.47	1.32	0.05	0.40	1.90	4.44	2.73	0.07	100.00	4.30	
UT1660-11	74.63	0.21	14.66	1.37	0.01	0.42	1.91	3.93	2.81	0.06	100.00	6.24	
UT1660-12	74.73	0.28	14.47	1.41	0.06	0.42	1.76	3.96	2.91	0.01	100.00	5.46	
UT1660-1	74.29	0.25	14.68	1.46	0.00	0.40	1.82	4.06	2.99	0.05	100.00	4.72	Sept 27 2006
UT1660-2	74.40	0.20	14.50	1.29	0.05	0.45	1.97	4.16	2.95	0.03	100.00	7.14	
UT1660-3	74.68	0.21	14.54	1.28	0.06	0.44	1.91	3.99	2.86	0.04	100.00	5.87	
UT1660-4	74.52	0.18	14.61	1.32	0.06	0.43	1.85	4.08	2.91	0.05	100.00	6.01	
UT1660-5	74.55	0.22	14.68	1.28	0.02	0.42	1.87	4.04	2.88	0.05	100.00	5.74	
UT1660-6	74.47	0.24	14.42	1.29	0.09	0.38	1.92	4.24	2.91	0.03	100.00	6.99	
UT1660-7	74.65	0.23	14.55	1.35	0.00	0.44	1.88	3.97	2.89	0.03	100.00	5.31	

UT1660-8	74.89	0.21	14.37	1.30	0.05	0.41	1.79	4.13	2.78	0.07	100.00	3.68	
UT1660-9	74.42	0.21	14.46	1.40	0.04	0.44	1.88	4.22	2.88	0.06	100.00	2.87	
UT1660-10	74.67	0.24	14.60	1.26	0.00	0.45	1.94	3.98	2.83	0.04	100.00	5.19	
UT1660-11	74.65	0.13	14.37	1.44	0.00	0.44	1.87	4.21	2.86	0.02	100.00	7.33	
UT1660-12	74.57	0.26	14.45	1.37	0.02	0.46	1.88	4.06	2.88	0.04	100.00	5.07	
UT1660-14	74.48	0.29	14.35	1.37	0.06	0.44	1.86	4.22	2.90	0.03	100.00	4.81	
UT1660-15	74.28	0.29	14.52	1.28	0.04	0.49	1.86	4.28	2.92	0.04	100.00	5.45	
UT1660-16	74.56	0.28	14.41	1.31	0.03	0.42	1.92	4.10	2.87	0.09	100.00	3.22	
UT1660-17	74.54	0.23	14.48	1.20	0.10	0.44	1.86	4.21	2.92	0.03	100.00	6.98	
UT1660-18	74.43	0.24	14.59	1.22	0.08	0.45	1.95	4.00	3.00	0.04	100.00	6.77	
UA1051-1	74.79	0.26	14.48	1.38	0.02	0.42	1.84	3.84	2.90	0.07	100.00	6.25	Dec. 13 2005
UA1051-2	74.93	0.25	14.53	1.32	0.01	0.45	1.69	3.85	2.95	0.04	100.00	6.33	
UA1051-3	74.48	0.21	14.64	1.35	0.08	0.41	1.82	3.94	3.04	0.03	100.00	5.68	
UA1051-4	74.71	0.22	14.65	1.40	0.05	0.39	1.84	3.69	2.97	0.08	100.00	9.54	
UA1051-5	74.48	0.24	14.60	1.38	0.05	0.42	1.78	4.06	2.98	0.00	100.00	5.28	
UA1051-6	74.38	0.20	14.96	1.37	0.00	0.43	1.76	3.92	2.94	0.04	100.00	6.16	
UA1051-7	74.44	0.19	14.68	1.42	0.07	0.44	1.72	4.17	2.84	0.03	100.00	4.44	
UA1051-8	74.49	0.22	14.79	1.37	0.05	0.41	1.75	3.97	2.91	0.03	100.00	4.48	
UA1051-9	74.79	0.24	14.64	1.37	0.00	0.40	1.82	3.90	2.84	0.02	100.00	5.05	
UA1051-10	74.46	0.22	14.64	1.37	0.04	0.46	1.82	4.13	2.85	0.03	100.00	4.26	
UA1051-11	74.50	0.23	14.42	1.40	0.05	0.45	1.78	4.23	2.82	0.10	100.00	5.00	
UA1051-12	74.63	0.26	14.81	1.43	0.02	0.41	1.77	3.80	2.82	0.06	100.00	6.07	
UA1051-13	74.44	0.20	14.80	1.39	0.01	0.43	1.81	3.99	2.88	0.06	100.00	6.42	
UA1051-14	74.79	0.21	14.73	1.34	0.02	0.40	1.73	3.77	2.91	0.11	100.00	5.01	
UA1051-15	74.57	0.18	14.41	1.42	0.06	0.46	1.73	4.16	2.97	0.03	100.00	6.04	
UA1051-1	74.33	0.18	14.70	1.38	0.06	0.47	1.89	4.09	2.88	0.02	100.00	5.48	June 22 2006
UA1051-2	74.65	0.27	14.73	1.28	0.00	0.46	1.82	3.97	2.80	0.03	100.00	5.27	
UA1051-3	74.37	0.22	14.51	1.42	0.05	0.40	1.83	4.15	3.01	0.05	100.00	6.24	
UA1051-4	73.93	0.31	14.83	1.44	0.05	0.47	1.94	4.17	2.79	0.06	100.00	4.86	
UA1051-5	74.10	0.25	14.74	1.46	0.06	0.45	1.90	4.08	2.89	0.08	100.00	6.38	
UA1051-6	73.92	0.25	15.13	1.40	0.06	0.45	2.03	3.90	2.80	0.06	100.00	4.17	
UA1051-7	74.58	0.23	14.51	1.32	0.04	0.47	1.89	4.08	2.86	0.04	100.00	5.51	
UA1051-8	74.56	0.25	14.69	1.30	0.05	0.44	1.85	3.98	2.86	0.04	100.00	5.39	
UA1051-10	74.50	0.26	14.74	1.28	0.06	0.36	1.81	3.99	2.92	0.09	100.00	8.59	

UA1051-11	74.47	0.19	14.90	1.32	0.01	0.39	1.86	4.00	2.83	0.02	100.00	5.57	
UA1051-12	74.59	0.19	14.80	1.32	0.02	0.46	1.79	3.95	2.82	0.05	100.00	5.89	
UA1051-13	74.24	0.23	14.80	1.26	0.07	0.44	1.89	4.13	2.90	0.05	100.00	5.01	
UA1051-14	74.52	0.30	14.66	1.33	0.03	0.40	1.76	3.98	2.97	0.03	100.00	4.83	
UA1051-15	74.68	0.29	14.35	1.37	0.01	0.39	1.82	4.13	2.92	0.05	100.00	5.89	
UA1067-3	74.76	0.19	14.58	1.40	0.05	0.42	1.69	3.89	3.02	0.00	100.00	5.35	Dec. 13 2005
UA1067-4	74.90	0.22	14.52	1.41	0.06	0.47	1.74	3.81	2.87	0.00	100.00	6.06	
UA1067-5	74.87	0.18	14.59	1.32	0.02	0.38	1.74	3.82	3.04	0.04	100.00	6.70	
UA1067-6	74.81	0.30	14.75	1.42	0.07	0.44	1.74	3.62	2.78	0.05	100.00	7.42	
UA1067-7	74.53	0.23	14.64	1.34	0.05	0.45	1.77	3.98	3.00	0.00	100.00	5.24	
UA1067-8	74.64	0.21	14.64	1.45	0.00	0.43	1.73	3.92	2.95	0.03	100.00	5.03	
UA1067-9	74.73	0.21	14.57	1.34	0.03	0.42	1.74	4.04	2.92	0.00	100.00	6.18	
UA1067-10	74.68	0.20	14.62	1.47	0.07	0.41	1.76	3.84	2.89	0.07	100.00	4.99	
UA1067-11	74.51	0.24	14.60	1.39	0.08	0.47	1.76	4.00	2.94	0.01	100.00	5.73	
UA1067-12	75.00	0.20	14.57	1.40	0.06	0.36	1.75	3.92	2.73	0.01	100.00	5.90	
UA1067-13	74.79	0.29	14.56	1.37	0.08	0.41	1.76	3.90	2.76	0.08	100.00	5.55	
UA1067-14	74.51	0.25	14.53	1.45	0.00	0.44	1.74	4.21	2.84	0.02	100.00	4.77	
UA1067-15	74.46	0.26	14.64	1.44	0.08	0.40	1.79	4.12	2.75	0.06	100.00	4.85	
UA1067-1	74.49	0.27	14.67	1.34	0.03	0.44	1.84	4.05	2.85	0.02	100.00	5.90	June 22 2006
UA1067-2	74.27	0.27	14.68	1.42	0.08	0.42	1.90	3.94	2.96	0.05	100.00	4.93	
UA1067-3	74.28	0.26	14.57	1.36	0.06	0.47	1.82	4.25	2.88	0.05	100.00	2.36	
UA1067-4	74.34	0.25	14.64	1.32	0.04	0.42	1.95	3.99	3.05	0.00	100.00	4.96	
UA1067-6	74.74	0.20	14.39	1.37	0.08	0.42	1.91	4.07	2.77	0.05	100.00	6.47	
UA1067-7	74.65	0.23	14.58	1.42	0.04	0.40	1.86	3.97	2.82	0.02	100.00	5.14	
UA1067-8	74.46	0.27	14.58	1.47	0.01	0.43	1.87	3.93	2.93	0.05	100.00	5.63	
UA1067-10	74.76	0.20	14.49	1.28	0.00	0.43	1.86	4.11	2.84	0.03	100.00	5.40	
UA1067-11	74.62	0.21	14.50	1.40	0.02	0.44	1.82	3.98	2.98	0.03	100.00	4.59	
UA1067-13	74.34	0.18	14.72	1.33	0.06	0.44	1.88	4.08	2.89	0.08	100.00	4.73	
UA1067-14	74.51	0.17	14.65	1.40	0.02	0.47	1.83	4.04	2.86	0.05	100.00	5.17	
UA1067-15	74.15	0.28	14.59	1.33	0.02	0.46	1.88	4.35	2.92	0.02	100.00	4.07	
ut1873-1	74.18	0.29	14.55	1.47	0.04	0.49	1.88	4.23	2.81	0.07	100.00	5.74	
ut1873-2	73.60	0.26	14.98	1.47	0.02	0.44	2.06	4.20	2.93	0.04	100.00	7.78	
ut1873-3	73.89	0.26	14.96	1.40	0.04	0.51	1.94	4.15	2.83	0.02	100.00	5.62	
ut1873-4	73.70	0.13	14.93	1.47	0.02	0.55	2.01	4.23	2.87	0.09	100.00	5.01	

ut1873-6	74.27	0.32	14.68	1.26	0.03	0.49	1.92	4.11	2.91	0.02	100.00	6.44
ut1873-7	74.21	0.17	14.77	1.39	0.02	0.50	1.92	4.03	2.95	0.05	100.00	6.93
ut1873-8	73.68	0.10	15.14	1.44	0.03	0.45	1.93	4.39	2.80	0.03	100.00	5.43
ut1873-9	73.76	0.11	14.96	1.51	0.06	0.54	1.90	4.28	2.79	0.08	100.00	5.37
ut1873-10	75.69	0.23	14.13	0.98	0.03	0.35	1.55	3.79	3.19	0.05	100.00	6.38
ut1873-11	73.27	0.25	15.25	1.48	0.04	0.49	2.08	4.25	2.84	0.04	100.00	4.44
ut1873-12	74.14	0.33	14.64	1.27	0.04	0.30	1.84	4.28	3.11	0.05	100.00	4.56
ut1873-13	74.61	0.17	14.73	1.30	0.02	0.38	1.73	3.99	2.97	0.10	100.00	1.52
ut1873-14	74.24	0.35	14.82	1.59	0.06	0.42	1.79	3.87	2.82	0.03	100.00	6.41
ut1873-15	73.65	0.21	15.02	1.37	0.08	0.46	2.09	4.22	2.92	0.00	100.00	6.83
ut1873-16	73.50	0.31	15.06	1.48	0.02	0.51	2.03	4.30	2.78	0.00	100.00	6.23
ut1873-17	73.47	0.18	15.19	1.40	0.05	0.46	2.07	4.31	2.80	0.06	100.00	6.92
ut1873-18	74.16	0.17	14.78	1.46	0.03	0.47	1.94	4.09	2.91	0.00	100.00	6.62
ut1873-19	73.79	0.15	14.84	1.49	0.05	0.54	2.05	4.11	2.93	0.04	100.00	7.32
ut1873-21	73.27	0.24	15.27	1.39	0.01	0.50	1.98	4.51	2.83	0.00	100.00	6.51
UT1873-1	74.30	0.22	14.80	1.32	0.03	0.46	1.99	3.96	2.89	0.03	100.00	5.80
UT1873-2	73.80	0.18	14.92	1.21	0.05	0.58	1.99	4.41	2.79	0.07	100.00	3.82
UT1873-4	73.80	0.24	14.66	1.44	0.08	0.45	2.04	4.32	2.91	0.06	100.00	1.56
UT1873-5	73.81	0.22	15.09	1.46	0.05	0.44	2.04	4.09	2.76	0.03	100.00	4.73
UT1873-6	74.10	0.28	14.73	1.38	0.05	0.52	1.90	4.18	2.84	0.03	100.00	5.65
UT1873-8	74.10	0.28	14.88	1.42	0.00	0.48	1.97	3.98	2.82	0.06	100.00	5.72
UT1873-9	74.45	0.21	14.58	1.39	0.00	0.37	1.79	4.30	2.87	0.04	100.00	1.96
UT1873-10	73.82	0.20	14.90	1.47	0.08	0.47	1.95	4.17	2.90	0.07	100.00	5.36
UT1873-11	73.89	0.24	14.99	1.46	0.02	0.48	1.99	4.16	2.72	0.05	100.00	5.65
UT1873-12	73.85	0.25	14.81	1.32	0.07	0.46	2.00	4.45	2.74	0.05	100.00	2.68
UTut1873-2	73.93	0.29	14.84	1.41	0.02	0.44	1.96	4.16	2.90	0.03	100.00	5.06
UTut1873-3	74.59	0.15	14.50	1.27	0.11	0.48	1.96	4.10	2.79	0.05	100.00	5.40
UTut1873-5	74.14	0.22	14.77	1.37	0.02	0.47	2.03	4.12	2.80	0.05	100.00	7.88
UTut1873-6	74.47	0.25	14.64	1.31	0.06	0.46	1.98	4.08	2.69	0.06	100.00	6.58
UTut1873-8	74.14	0.24	14.64	1.49	0.06	0.43	2.00	4.16	2.79	0.06	100.00	3.27
UTut1873-9	73.76	0.23	14.82	1.43	0.09	0.53	2.04	4.30	2.76	0.03	100.00	2.82
UTut1873-10	74.75	0.18	14.54	1.37	0.02	0.39	1.84	4.03	2.86	0.02	100.00	6.77
UTut1873-11	73.91	0.20	14.92	1.37	0.02	0.49	1.92	4.14	3.01	0.02	100.00	6.01
UTut1873-12	74.03	0.22	14.87	1.41	0.05	0.48	2.06	3.98	2.84	0.06	100.00	8.03

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ut1874-1	74.13	0.24	14.77	1.44	0.05	0.40	1.79	4.21	2.97	0.00	100.00	5.95	Mar. 16 2005
ut1874-3	74.25	0.26	14.58	1.34	0.10	0.36	1.82	4.32	2.88	0.07	100.00	6.18	
ut1874-4	73.92	0.15	15.08	1.36	0.03	0.46	1.89	4.31	2.78	0.01	100.00	7.85	
ut1874-5	74.60	0.19	14.35	1.52	0.07	0.41	1.96	4.04	2.87	0.00	100.00	5.32	
ut1874-6	74.04	0.30	14.65	1.54	0.04	0.45	1.91	4.18	2.86	0.03	100.00	4.64	
ut1874-7	74.50	0.19	14.60	1.36	0.03	0.36	1.87	4.15	2.85	0.09	100.00	4.76	
ut1874-8	75.01	0.24	14.33	1.29	0.01	0.41	1.81	4.06	2.81	0.03	100.00	5.90	
ut1874-9	74.35	0.23	14.66	1.43	0.05	0.43	1.84	3.99	2.98	0.03	100.00	7.61	
ut1874-10	73.87	0.26	14.63	1.60	0.10	0.42	1.86	4.40	2.80	0.06	100.00	5.95	
ut1874-11	74.89	0.20	14.21	1.29	0.07	0.43	1.90	4.17	2.83	0.00	100.00	9.37	
ut1874-12	74.90	0.18	14.45	1.29	0.09	0.40	1.83	4.01	2.82	0.04	100.00	5.56	
ut1874-13	74.35	0.13	14.69	1.41	0.02	0.43	1.97	4.10	2.87	0.04	100.00	6.88	
ut1874-14	74.75	0.12	14.60	1.38	0.06	0.44	1.91	3.88	2.82	0.04	100.00	6.78	
ut1874-15	74.84	0.20	14.33	1.45	0.04	0.44	1.81	4.00	2.83	0.06	100.00	5.87	
ut1874-17	74.74	0.26	14.39	1.33	0.01	0.42	1.93	4.03	2.84	0.05	100.00	7.34	
ut1874-18	74.42	0.21	14.75	1.26	0.03	0.48	1.84	4.11	2.90	0.01	100.00	6.12	
ut1874-19	74.72	0.16	14.44	1.41	0.00	0.47	1.83	4.04	2.88	0.05	100.00	6.04	
ut1874-20	74.34	0.13	14.84	1.31	0.02	0.40	1.90	4.07	2.85	0.13	100.00	5.71	
ut1874-21	74.85	0.22	14.14	1.38	0.03	0.43	1.83	4.34	2.77	0.01	100.00	5.53	
ut1874-22	74.76	0.22	14.61	1.30	0.02	0.39	1.86	3.92	2.90	0.02	100.00	5.60	
ut1874-23	73.85	0.21	14.87	1.49	0.03	0.39	1.84	4.23	3.05	0.05	100.00	6.74	
ut1874-24	74.70	0.24	14.45	1.30	0.08	0.45	1.85	4.10	2.82	0.00	100.00	2.20	
UT1874-1	74.79	0.14	14.65	1.39	0.04	0.44	1.87	3.85	2.80	0.02	100.00	8.07	June 22 2006
UT1874-2	74.83	0.27	14.39	1.36	0.00	0.41	1.87	3.81	3.00	0.06	100.00	6.26	
UT1874-3	74.74	0.27	14.57	1.24	0.02	0.39	1.78	4.02	2.94	0.03	100.00	5.37	
UT1874-4	74.39	0.33	14.29	1.33	0.11	0.40	1.83	4.28	2.98	0.05	100.00	5.15	
UT1874-5	74.76	0.16	14.61	1.32	0.04	0.45	1.81	4.00	2.82	0.03	100.00	6.76	
UT1874-6	74.10	0.24	14.43	1.37	0.08	0.43	1.87	4.36	3.06	0.05	100.00	4.00	
UT1874-7	74.89	0.22	14.38	1.36	0.02	0.43	1.87	3.87	2.93	0.03	100.00	6.51	
UT1874-8	74.72	0.16	14.43	1.29	0.04	0.43	1.81	4.20	2.86	0.07	100.00	5.57	
UT1874-9	74.64	0.22	14.51	1.41	0.03	0.45	1.84	3.94	2.89	0.07	100.00	6.15	
UT1874-10	74.70	0.22	14.48	1.29	0.05	0.39	1.84	4.10	2.92	0.00	100.00	6.61	
UT1874-11	74.78	0.18	14.45	1.39	0.06	0.41	1.76	4.07	2.87	0.01	100.00	5.29	
UTut1874-1	74.58	0.22	14.59	1.27	0.00	0.44	1.92	4.06	2.89	0.02	100.00	5.97	

UTut1874-2	74.41	0.20	14.74	1.34	0.01	0.43	1.94	3.98	2.92	0.03	100.00	8.24
UTut1874-3	74.69	0.19	14.49	1.23	0.05	0.44	1.85	4.02	3.01	0.03	100.00	6.45
UTut1874-4	74.62	0.17	14.63	1.27	0.04	0.43	1.85	4.06	2.89	0.06	100.00	6.36
UTut1874-6	74.66	0.25	14.48	1.30	0.06	0.42	1.76	4.14	2.91	0.03	100.00	5.71
UTut1874-7	74.54	0.20	14.56	1.41	0.07	0.38	1.90	4.03	2.87	0.03	100.00	5.43
UTut1874-8	74.67	0.26	14.42	1.33	0.08	0.41	1.93	4.07	2.82	0.00	100.00	6.20
UTut1874-9	74.59	0.27	14.36	1.42	0.02	0.44	1.90	4.07	2.87	0.06	100.00	6.04
UTut1874-10	74.44	0.20	14.52	1.37	0.04	0.42	1.90	4.26	2.84	0.01	100.00	4.71
UTut1874-11	74.55	0.23	14.45	1.29	0.01	0.44	1.86	4.11	2.99	0.07	100.00	6.02
UTut1874-12	74.74	0.19	14.41	1.29	0.02	0.47	1.80	4.18	2.86	0.05	100.00	4.60
ut1875-2	74.34	0.20	14.86	1.38	0.03	0.39	1.79	3.99	2.91	0.12	100.00	7.37
ut1875-3	73.86	0.17	14.49	1.48	[illegible]	0.50	1.92	4.59	2.85	0.13	100.00	5.95
ut1875-4	74.89	0.11	14.09	1.32	0.06	0.47	1.79	4.28	2.93	0.06	100.00	3.65
ut1875-6	74.22	0.13	14.78	1.41	0.02	0.42	1.83	4.22	2.92	0.05	100.00	5.77
ut1875-7	74.05	0.21	14.55	1.35	0.09	0.41	1.97	4.35	2.90	0.12	100.00	6.43
ut1875-8	73.97	0.28	14.91	1.43	0.00	0.50	2.08	4.10	2.74	0.00	100.00	7.07
ut1875-9	74.00	0.23	14.98	1.39	0.04	0.52	1.90	3.93	3.00	0.00	100.00	7.78
ut1875-10	74.34	0.12	14.75	1.41	0.02	0.44	1.80	4.07	3.02	0.02	100.00	6.79
ut1875-12	74.07	0.15	14.67	1.17	0.02	0.53	1.84	4.72	2.78	0.06	100.00	9.48
ut1875-13	73.80	0.21	14.72	1.48	0.03	0.47	1.98	4.37	2.90	0.04	100.00	6.79
ut1875-14	74.92	0.24	14.18	1.35	0.03	0.43	1.89	4.00	2.94	0.01	100.00	6.72
ut1875-15	74.66	0.27	14.24	1.28	0.01	0.43	1.89	4.24	2.88	0.09	100.00	3.78
ut1875-16	74.16	0.22	14.68	1.41	0.11	0.48	1.82	4.22	2.84	0.06	100.00	4.78
ut1875-17	74.43	0.17	14.50	1.45	0.07	0.35	1.90	4.18	2.89	0.07	100.00	6.47
ut1875-18	74.46	0.18	14.33	1.32	0.03	0.40	1.81	4.58	2.86	0.03	100.00	4.15
ut1875-19	74.37	0.30	14.35	1.54	0.04	0.58	1.79	4.10	2.94	0.00	100.00	4.27
ut1875-20	73.92	0.32	14.90	1.37	0.11	0.44	1.95	4.12	2.83	0.04	100.00	6.06
ut1875-21	75.01	0.21	14.29	1.44	0.01	0.45	1.75	4.03	2.80	0.00	100.00	4.08
ut1875-22	74.93	0.23	14.16	1.39	0.06	0.39	1.90	4.08	2.81	0.04	100.00	5.19
ut1875-23	74.35	0.16	14.71	1.32	0.03	0.42	1.80	4.27	2.87	0.06	100.00	4.98
ut1875-1	74.09	0.16	14.91	1.36	0.08	0.42	1.90	4.14	2.90	0.05	100.00	6.37
ut1875-2	74.94	0.15	14.47	1.35	0.05	0.39	1.83	4.07	2.74	0.01	100.00	6.25
ut1875-3	74.70	0.26	14.51	1.37	0.04	0.38	1.81	3.98	2.88	0.07	100.00	6.46
ut1875-4	74.16	0.16	14.68	1.33	0.12	0.47	1.86	4.31	2.90	0.02	100.00	5.01

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ut1875-5	74.64	0.23	14.45	1.35	0.02	0.40	1.90	4.21	2.77	0.03	100.00	5.39
ut1875-6	74.65	0.24	14.33	1.41	0.02	0.38	1.86	4.18	2.93	0.00	100.00	5.63
ut1875-8	74.62	0.26	14.43	1.33	0.00	0.45	1.87	4.09	2.89	0.05	100.00	7.56
ut1875-9	74.52	0.18	14.47	1.33	0.08	0.40	1.90	4.22	2.87	0.03	100.00	5.66
ut1875-10	74.59	0.28	14.21	1.48	0.07	0.49	1.91	3.97	2.93	0.07	100.00	5.97
ut1875-11	74.39	0.19	14.85	1.37	0.04	0.43	1.87	4.08	2.76	0.01	100.00	6.59
ut1875-12	73.83	0.09	14.85	1.41	0.09	0.47	1.90	4.24	3.00	0.11	100.00	7.95
ut1875-13	74.26	0.24	14.91	1.41	0.02	0.44	1.81	4.06	2.84	0.00	100.00	7.37
ut1875-15	74.75	0.22	14.49	1.43	0.00	0.40	1.77	3.73	3.11	0.10	100.00	8.47
ut1875-16	74.39	0.30	14.66	1.36	0.04	0.40	1.88	4.10	2.80	0.06	100.00	5.84
ut1875-17	73.51	0.25	15.24	1.45	0.02	0.47	1.82	4.21	2.99	0.03	100.00	7.74
ut1875-18	74.15	0.24	14.70	1.41	0.04	0.46	1.90	4.07	2.97	0.06	100.00	7.44
ut1875-19	74.22	0.27	14.67	1.35	0.04	0.46	1.85	4.25	2.84	0.04	100.00	5.54
ut1875-20	74.73	0.12	14.57	1.30	0.04	0.46	1.86	3.97	2.92	0.03	100.00	7.41
ut1875-22	74.30	0.23	14.64	1.39	0.07	0.48	1.83	4.13	2.89	0.04	100.00	5.57
ut1875-23	74.22	0.17	14.79	1.38	0.04	0.36	1.87	4.34	2.82	0.00	100.00	5.13
ut1875-24	73.97	0.23	14.96	1.37	0.04	0.40	1.95	4.25	2.83	0.00	100.00	5.88
ut1875-25	74.11	0.13	14.95	1.29	0.09	0.38	1.90	4.13	2.97	0.05	100.00	6.62
UT1875-1	74.47	0.26	14.57	1.29	0.07	0.42	1.86	4.11	2.91	0.04	100.00	5.89
UT1875-2	74.35	0.33	14.64	1.31	0.02	0.39	1.76	4.16	2.97	0.06	100.00	6.02
UT1875-3	74.49	0.24	14.72	1.30	0.02	0.40	1.86	4.15	2.76	0.06	100.00	5.50
UT1875-4	74.47	0.17	14.63	1.31	0.03	0.42	1.89	4.11	2.93	0.05	100.00	5.77
UT1875-6	74.70	0.27	14.51	1.36	0.07	0.40	1.84	4.04	2.79	0.01	100.00	6.81
UT1875-7	74.41	0.23	14.43	1.32	0.08	0.45	1.84	4.34	2.87	0.03	100.00	4.99
UT1875-8	73.73	0.27	15.12	1.38	0.00	0.51	1.98	4.07	2.90	0.04	100.00	5.61
UT1875-9	74.63	0.24	14.72	1.27	0.02	0.43	1.80	3.98	2.91	0.01	100.00	7.36
UT1875-10	74.71	0.25	14.51	1.34	0.08	0.43	1.87	3.94	2.85	0.00	100.00	5.68
UT1875-11	74.37	0.25	14.71	1.34	0.04	0.41	1.81	4.23	2.83	0.02	100.00	6.39
UT1875-12	74.75	0.23	14.57	1.40	0.07	0.35	1.82	3.91	2.87	0.03	100.00	3.36
UTut1875-1	74.23	0.30	14.88	1.37	0.05	0.42	1.85	3.95	2.85	0.10	100.00	7.13
UTut1875-3	74.46	0.23	14.66	1.37	0.05	0.39	1.71	4.10	2.95	0.07	100.00	5.81
UTut1875-4	74.70	0.22	14.55	1.21	0.02	0.36	1.87	4.08	2.96	0.04	100.00	6.95
UTut1875-6	74.48	0.19	14.73	1.42	0.12	0.41	1.79	3.94	2.89	0.03	100.00	6.96
UTut1875-7	74.49	0.27	14.70	1.28	0.05	0.46	1.95	3.87	2.89	0.05	100.00	6.75

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UTut1875-8	74.65	0.27	14.59	1.38	0.03	0.42	1.83	4.04	2.74	0.04	100.00	6.78	
UTut1875-9	74.87	0.19	14.48	1.11	0.02	0.40	1.93	3.97	2.99	0.05	100.00	5.62	
UTut1875-10	74.61	0.24	14.67	1.25	0.04	0.47	1.75	3.94	2.95	0.08	100.00	7.72	
UTut1875-11	74.99	0.23	14.50	1.16	0.11	0.46	1.80	3.87	2.83	0.05	100.00	6.30	
UTut1875-13	74.62	0.31	14.51	1.25	0.02	0.44	1.83	3.96	2.98	0.09	100.00	7.13	
UTb1875-3	74.66	0.20	14.70	1.24	0.02	0.36	1.92	3.90	2.94	0.06	100.00	6.09	
UTb1875-5	74.68	0.22	14.54	1.38	0.03	0.46	1.84	3.94	2.85	0.04	100.00	5.38	
UTb1875-6	74.49	0.20	14.72	1.33	0.03	0.41	1.88	4.04	2.85	0.04	100.00	5.63	
UTb1875-7	74.75	0.22	14.47	1.20	0.03	0.38	1.92	4.09	2.87	0.06	100.00	5.15	
ut1894-1	75.01	0.14	14.81	1.13	0.12	0.43	1.89	3.33	3.14	0.00	100.00	5.52	Mar. 16 2005
ut1894-2	74.49	0.14	14.64	1.47	0.05	0.44	1.89	4.13	2.74	0.00	100.00	4.94	
ut1894-3	74.27	0.12	14.69	1.41	0.01	0.41	1.91	4.27	2.85	0.07	100.00	6.23	
ut1894-5	74.42	0.20	14.84	1.37	0.08	0.38	1.98	3.98	2.74	0.00	100.00	5.63	
ut1894-6	74.10	0.27	14.73	1.40	0.03	0.47	1.98	4.20	2.77	0.04	100.00	4.33	
ut1894-7	74.20	0.23	14.73	1.45	0.03	0.42	1.96	4.29	2.64	0.04	100.00	4.44	
ut1894-8	75.45	0.24	14.12	1.35	0.06	0.31	1.61	4.05	2.82	0.00	100.00	2.69	
ut1894-9	74.68	0.22	14.49	1.37	0.02	0.42	1.85	4.14	2.79	0.04	100.00	4.42	
ut1894-10	74.32	0.24	14.50	1.34	0.04	0.42	1.83	4.39	2.90	0.02	100.00	5.51	
ut1894-11	74.69	0.14	14.42	1.43	0.09	0.43	1.72	4.23	2.85	0.02	100.00	4.97	
ut1894-12	74.72	0.19	14.60	1.42	0.00	0.44	1.77	4.12	2.73	0.01	100.00	4.64	
ut1894-13	74.94	0.16	14.31	1.35	0.03	0.38	1.87	4.11	2.80	0.07	100.00	4.55	
ut1894-14	74.39	0.13	14.79	1.29	0.04	0.48	1.90	4.15	2.78	0.06	100.00	4.92	
ut1894-15	74.78	0.22	14.35	1.45	0.03	0.42	1.81	4.08	2.74	0.12	100.00	4.42	
ut1894-16	74.99	0.25	14.31	1.37	0.07	0.39	1.73	4.08	2.76	0.04	100.00	5.29	
ut1894-17	74.65	0.26	14.40	1.38	0.04	0.46	1.82	4.08	2.86	0.04	100.00	4.15	
ut1894-18	77.72	0.15	12.83	1.32	0.06	0.20	0.88	3.46	3.34	0.03	100.00	3.89	
ut1894-19	74.47	0.26	14.55	1.37	0.03	0.43	1.81	4.20	2.81	0.07	100.00	6.06	
ut1894-20	74.22	0.17	15.09	1.27	0.05	0.35	2.04	4.11	2.62	0.08	100.00	3.37	
UT1894-1	73.91	0.25	15.03	1.38	0.04	0.43	1.98	4.25	2.66	0.08	100.00	4.74	June 22 2006
UT1894-2	73.98	0.26	14.75	1.34	0.09	0.44	1.96	4.25	2.86	0.07	100.00	4.00	
UT1894-3	73.98	0.27	14.79	1.38	0.08	0.45	1.95	4.25	2.83	0.02	100.00	3.17	
UT1894-4	74.76	0.25	14.54	1.40	0.08	0.44	1.87	3.92	2.72	0.02	100.00	6.94	
UT1894-5	74.29	0.28	14.48	1.50	0.07	0.37	1.83	4.23	2.94	0.01	100.00	4.34	
UT1894-6	74.29	0.19	15.26	1.45	0.03	0.39	1.83	3.68	2.84	0.03	100.00	11.20	

UT1894-7	74.62	0.21	14.59	1.36	0.02	0.37	1.83	4.07	2.89	0.03	100.00	7.17	
UT1894-8	74.40	0.18	14.63	1.32	0.06	0.48	1.89	3.94	3.10	0.02	100.00	6.13	
UT1894-9	74.72	0.23	14.30	1.36	0.00	0.43	1.85	4.04	3.02	0.05	100.00	5.16	
UT1894-10	74.02	0.19	15.04	1.33	0.06	0.51	1.94	4.11	2.78	0.02	100.00	5.32	
UT1894-11	73.67	0.22	15.06	1.53	0.06	0.45	2.11	3.96	2.85	0.08	100.00	7.13	
UT1894-12	74.22	0.18	14.83	1.34	0.03	0.48	1.97	4.05	2.87	0.02	100.00	5.30	
UTut1894-4	74.49	0.28	14.51	1.32	0.02	0.39	1.94	3.94	3.02	0.07	100.00	8.95	
UTut1894-7	74.52	0.31	14.65	1.44	0.01	0.40	1.87	3.88	2.86	0.06	100.00	5.75	
UTut1894-8	74.75	0.33	14.54	1.27	0.11	0.39	1.85	3.93	2.79	0.04	100.00	6.03	
UTut1894-9	74.78	0.25	14.45	1.33	0.03	0.33	1.80	4.01	2.97	0.05	100.00	7.20	
UTut1894-10	74.97	0.17	14.53	1.39	0.04	0.39	1.92	3.57	2.96	0.07	100.00	7.85	
UTut1894-11	74.66	0.25	14.47	1.24	0.09	0.40	1.85	4.08	2.96	0.00	100.00	7.31	
UTut1894-12	74.21	0.19	14.88	1.38	0.04	0.49	2.02	3.85	2.88	0.05	100.00	6.10	
UA 1049-1	74.11	0.15	14.99	1.39	0.04	0.38	1.96	3.97	2.94	0.07	100.00	7.09	**Sept. 27 2006**
UA 1049-2	73.96	0.24	14.87	1.45	0.05	0.36	1.92	4.07	3.03	0.06	100.00	4.43	
UA 1049-3	73.98	0.29	14.97	1.40	0.09	0.42	1.90	3.96	2.91	0.06	100.00	5.94	
UA 1049-4	73.90	0.20	15.31	1.35	0.03	0.48	1.75	4.03	2.92	0.04	100.00	6.91	
UA 1049-5	74.89	0.23	14.35	1.41	0.07	0.36	1.77	3.97	2.89	0.06	100.00	4.20	
UA 1049-6	74.99	0.09	14.63	1.27	0.10	0.35	1.71	3.99	2.84	0.03	100.00	4.66	
UA 1049-7	74.42	0.15	14.87	1.47	0.07	0.47	1.75	3.99	2.77	0.05	100.00	5.22	
UA 1049-8	74.03	0.20	15.06	1.48	0.04	0.41	1.77	4.02	2.95	0.04	100.00	10.07	
UA 1049-9	73.84	0.40	15.13	1.27	0.07	0.42	1.74	4.09	2.96	0.07	100.00	5.64	
UA 1049-10	74.49	0.16	14.60	1.38	0.04	0.45	1.80	4.20	2.84	0.04	100.00	4.38	
UA 1049-11	74.10	0.21	15.28	1.44	0.00	0.40	1.79	3.96	2.80	0.02	100.00	7.94	
UA 1049-12	74.70	0.14	14.95	1.39	0.03	0.34	1.77	3.80	2.82	0.06	100.00	5.74	
UA 1049-13	74.28	0.24	15.06	1.37	0.09	0.35	1.83	3.86	2.86	0.05	100.00	7.79	
UA 1049-14	74.53	0.10	14.91	1.30	0.08	0.36	1.81	3.92	2.94	0.05	100.00	8.94	
UA 1049-15	74.09	0.24	15.17	1.37	0.03	0.39	1.85	3.93	2.86	0.06	100.00	6.41	
UA 1049-16	73.77	0.38	14.96	1.39	0.00	0.40	1.91	4.33	2.80	0.04	100.00	5.02	
UA 1049-17	74.24	0.12	14.80	1.44	0.03	0.40	1.89	4.19	2.84	0.05	100.00	6.20	
UA 1049-18	74.16	0.23	15.06	1.31	0.01	0.45	1.90	3.99	2.84	0.05	100.00	6.16	
UA 1049-19	73.89	0.12	14.86	1.46	0.09	0.44	1.97	4.28	2.82	0.07	100.00	4.16	
UA 1049-20	74.02	0.20	15.09	1.40	0.08	0.37	1.89	4.03	2.84	0.07	100.00	7.39	
Ua1049-1	74.76	0.23	14.36	1.31	0.07	0.40	1.87	4.01	2.93	0.06	100.00	4.73	**June 22 2006**

Ua1049-2	74.51	0.23	14.82	1.37	0.05	0.44	1.73	3.94	2.83	0.07	100.00	5.85	
Ua1049-3	74.87	0.18	14.46	1.27	0.06	0.43	1.85	3.95	2.89	0.04	100.00	4.03	
Ua1049-4	74.38	0.21	14.72	1.40	0.03	0.39	1.85	4.04	2.93	0.05	100.00	6.71	
Ua1049-5	74.53	0.29	14.69	1.31	0.08	0.46	1.82	3.85	2.92	0.04	100.00	4.91	
Ua1049-6	74.59	0.16	14.55	1.41	0.03	0.45	1.91	3.91	2.92	0.07	100.00	4.75	
Ua1049-7	74.51	0.30	14.85	1.26	0.08	0.37	1.85	3.94	2.80	0.03	100.00	6.94	
Ua1049-8	74.87	0.23	14.63	1.32	0.05	0.40	1.82	3.85	2.83	0.01	100.00	5.39	
Ua1049-9	74.63	0.17	14.40	1.34	0.07	0.43	1.75	4.09	3.06	0.07	100.00	9.13	
Ua1049-10	74.91	0.26	14.38	1.34	0.01	0.40	1.70	4.11	2.88	0.02	100.00	1.89	
Ua1049-11	74.78	0.23	14.47	1.42	0.00	0.43	1.82	4.02	2.80	0.03	100.00	5.33	
Ua1049-12	74.62	0.22	14.48	1.39	0.06	0.38	1.87	4.04	2.89	0.05	100.00	4.52	
Ua1049-13	74.71	0.22	14.63	1.45	0.06	0.43	1.90	3.66	2.85	0.08	100.00	4.66	
Ua1049-14	74.50	0.27	14.39	1.43	0.03	0.45	1.90	4.04	2.95	0.04	100.00	5.22	
Ua1049-15	74.71	0.27	14.58	1.32	0.02	0.39	1.92	3.82	2.93	0.05	100.00	5.45	
UA 1083-1	73.45	0.22	15.49	1.51	0.00	0.41	1.93	4.18	2.78	0.02	100.00	6.07	Sept. 27 2005
UA 1083-2	74.39	0.25	15.01	1.39	0.03	0.34	1.92	3.76	2.89	0.02	100.00	6.74	
UA 1083-3	74.10	0.26	14.97	1.39	0.08	0.39	1.80	4.05	2.94	0.02	100.00	6.64	
UA 1083-4	74.53	0.18	14.88	1.40	0.07	0.38	1.87	3.88	2.76	0.04	100.00	5.19	
UA 1083-5	73.86	0.22	15.24	1.46	0.07	0.42	1.97	4.05	2.67	0.03	100.00	4.27	
UA 1083-6	74.78	0.11	14.84	1.44	0.03	0.43	1.77	3.73	2.83	0.03	100.00	6.08	
UA 1083-7	73.49	0.21	15.41	1.52	0.03	0.44	1.95	4.26	2.67	0.03	100.00	4.84	
UA 1083-8	73.32	0.16	15.42	1.66	0.10	0.45	1.91	4.23	2.68	0.07	100.00	3.50	
UA 1083-9	73.52	0.14	15.11	1.55	0.03	0.45	1.96	4.33	2.88	0.03	100.00	5.37	
UA 1083-10	73.88	0.33	14.99	1.44	0.10	0.44	1.90	4.16	2.73	0.03	100.00	4.38	
UA 1083-12	73.50	0.21	15.47	1.63	0.04	0.47	2.07	4.15	2.45	0.02	100.00	5.12	
UA 1083-13	73.96	0.25	15.39	1.53	0.07	0.47	1.85	4.05	2.39	0.05	100.00	4.07	
UA 1083-14	73.71	0.20	15.36	1.51	0.00	0.47	1.89	3.96	2.82	0.07	100.00	6.05	
UA 1083-15	73.41	0.31	15.40	1.54	0.05	0.42	1.96	4.08	2.80	0.04	100.00	4.64	
UA 1083-17	74.13	0.10	15.32	1.35	0.08	0.37	1.88	3.80	2.88	0.09	100.00	8.01	
UA 1083-18	74.44	0.32	14.84	1.33	0.07	0.39	1.87	3.83	2.85	0.05	100.00	6.37	
UA 1083-19	74.02	0.21	14.97	1.51	0.03	0.50	2.01	3.94	2.76	0.04	100.00	5.68	
Ua1083-1	74.38	0.24	14.66	1.41	0.06	0.40	1.87	4.13	2.81	0.04	100.00	4.60	June 22 2006
Ua1083-2	72.61	0.22	15.51	1.76	0.02	0.58	2.72	4.49	2.09	0.01	100.00	2.44	
Ua1083-3	74.10	0.22	15.27	1.26	0.00	0.43	1.75	3.99	2.93	0.05	100.00	4.24	

Ua1083-4	74.76	0.19	14.72	1.41	0.06	0.41	1.80	3.81	2.78	0.05	100.00	5.70
Ua1083-5	74.09	0.24	15.03	1.35	0.05	0.45	2.00	4.06	2.70	0.04	100.00	4.99
Ua1083-6	73.78	0.25	14.94	1.47	0.09	0.47	2.13	4.10	2.69	0.07	100.00	5.90
Ua1083-7	73.38	0.19	15.11	1.72	0.03	0.62	2.18	3.97	2.77	0.03	100.00	8.72
Ua1083-8	74.22	0.23	14.84	1.38	0.06	0.42	1.96	3.98	2.90	0.01	100.00	5.86
Ua1083-9	74.30	0.21	14.91	1.36	0.07	0.45	1.99	3.94	2.76	0.01	100.00	6.29
Ua1083-10	74.93	0.18	14.46	1.31	0.03	0.44	1.85	3.92	2.87	0.02	100.00	5.51
Ua1083-11	74.80	0.22	14.51	1.40	0.02	0.43	1.81	3.81	2.97	0.04	100.00	6.27
Ua1083-12	74.12	0.25	14.69	1.43	0.06	0.47	2.02	4.15	2.78	0.03	100.00	4.70
Ua1083-13	74.25	0.29	14.88	1.41	0.04	0.44	1.90	4.00	2.78	0.00	100.00	5.92
Ua1083-14	73.69	0.32	15.31	1.48	0.03	0.49	1.88	3.95	2.82	0.03	100.00	4.32
Ua1083-15	74.10	0.20	14.89	1.51	0.08	0.49	1.90	4.11	2.68	0.04	100.00	4.14
Ua1083-16	74.75	0.21	14.73	1.35	0.00	0.39	1.83	3.95	2.71	0.07	100.00	5.50
Ua1083-17	74.18	0.24	14.79	1.44	0.03	0.50	1.97	4.07	2.71	0.07	100.00	5.45
ua1209-2	74.82	0.31	14.51	1.24	0.01	0.42	1.86	3.89	2.93	0.03	100.00	4.84
ua1209-3	74.67	0.19	14.64	1.35	0.05	0.42	1.90	3.91	2.83	0.05	100.00	3.08
ua1209-4	74.33	0.20	14.51	1.31	0.05	0.36	1.90	4.29	2.96	0.08	100.00	5.66
ua1209-5	74.60	0.17	14.45	1.32	0.06	0.44	1.82	4.17	2.93	0.04	100.00	4.47
ua1209-6	74.42	0.26	14.45	1.29	0.01	0.44	1.87	4.30	2.93	0.04	100.00	4.93
ua1209-7	75.02	0.17	14.56	1.33	0.04	0.41	1.88	3.83	2.74	0.01	100.00	7.01
ua1209-8	74.54	0.25	14.55	1.38	0.06	0.45	1.85	3.99	2.91	0.02	100.00	5.04
ua1209-9	74.31	0.25	14.42	1.35	0.08	0.36	1.86	4.29	3.04	0.05	100.00	2.30
ua1209-10	74.73	0.27	14.54	1.24	0.07	0.38	1.80	4.03	2.93	0.01	100.00	4.92
ua1209-11	74.43	0.15	14.67	1.37	0.05	0.45	1.92	3.96	2.94	0.06	100.00	7.48
ua1209-12	74.20	0.22	14.61	1.28	0.00	0.42	1.93	4.41	2.89	0.03	100.00	5.66
ua1209-13	74.37	0.22	14.53	1.33	0.07	0.45	1.84	4.26	2.88	0.04	100.00	4.06
ua1209-15	74.62	0.23	14.38	1.26	0.12	0.46	1.93	4.04	2.94	0.02	100.00	5.51
ut1881-1	74.46	0.22	15.03	1.50	0.05	0.49	1.83	3.57	2.85	0.00	100.00	8.61
ut1881-3	74.30	0.25	14.46	1.43	0.04	0.45	1.70	4.27	2.97	0.12	100.00	5.67
ut1881-4	74.44	0.20	14.75	1.48	0.02	0.41	1.77	3.93	2.91	0.10	100.00	6.39
ut1881-5	73.86	0.26	14.89	1.56	0.01	0.45	1.98	4.00	2.91	0.08	100.00	6.64
ut1881-6	74.34	0.10	14.72	1.61	0.07	0.39	1.72	3.96	2.93	0.15	100.00	6.30
ut1881-8	74.10	0.15	14.98	1.60	0.03	0.45	1.79	4.02	2.87	0.00	100.00	6.41
ut1881-9	75.16	0.18	14.19	1.50	0.00	0.39	1.70	4.17	2.63	0.06	100.00	7.02

ut1881-10	74.09	0.34	14.91	1.51	0.00	0.39	2.02	3.94	2.78	0.02	100.00	5.72	
ut1881-11	74.10	0.27	14.66	1.39	0.02	0.39	1.94	4.21	2.97	0.05	100.00	5.40	
ut1881-12	74.34	0.34	14.53	1.40	0.05	0.46	1.81	4.17	2.87	0.04	100.00	4.33	
ut1881-13	73.70	0.13	15.01	1.50	0.09	0.55	1.99	4.24	2.79	0.01	100.00	5.78	
ut1881-14	74.84	0.05	14.71	1.32	0.00	0.50	1.70	3.85	2.93	0.10	100.00	7.60	
ut1881-15	74.18	0.17	15.07	1.33	0.04	0.48	1.82	3.95	2.95	0.02	100.00	7.84	
ut1881-16	73.93	0.23	15.18	1.30	0.04	0.37	1.83	4.15	2.93	0.05	100.00	6.62	
ut1881-17	74.40	0.18	14.58	1.42	0.06	0.48	1.79	4.17	2.84	0.07	100.00	6.39	
ut1881-18	74.24	0.26	14.75	1.34	0.02	0.42	1.85	4.16	2.86	0.10	100.00	5.36	
ut1881-19	73.87	0.10	14.91	1.49	0.02	0.50	1.95	4.20	2.87	0.09	100.00	2.46	
ut1881-21	74.14	0.23	14.93	1.45	0.04	0.49	1.76	3.90	2.94	0.12	100.00	7.24	
ut1881-1	75.45	0.21	13.89	1.39	0.01	0.44	1.61	4.06	2.94	0.00	100.00	7.04	Mar. 16 2005
ut1881-2	75.68	0.14	14.16	1.27	0.08	0.38	1.61	3.92	2.74	0.02	100.00	7.33	
ut1881-3	74.55	0.18	14.53	1.37	0.06	0.45	1.63	4.15	3.03	0.06	100.00	8.44	
ut1881-5	74.91	0.26	14.07	1.49	0.05	0.43	1.71	4.20	2.85	0.03	100.00	3.82	
ut1881-6	74.29	0.27	14.65	1.36	0.00	0.50	1.77	4.28	2.83	0.04	100.00	5.03	
ut1881-7	74.97	0.05	14.27	1.46	0.08	0.43	1.82	4.13	2.77	0.04	100.00	5.86	
ut1881-8	74.96	0.21	14.56	1.37	0.01	0.40	1.79	3.93	2.75	0.03	100.00	4.94	
ut1881-9	74.88	0.19	14.38	1.40	0.12	0.39	1.78	3.96	2.91	0.00	100.00	6.26	
ut1881-10	74.14	0.13	14.63	1.34	0.02	0.46	2.00	4.29	2.83	0.16	100.00	4.76	
ut1881-11	74.41	0.25	14.30	1.45	0.02	0.46	1.86	4.37	2.80	0.07	100.00	2.82	
ut1881-12	74.52	0.18	14.57	1.36	0.04	0.45	1.87	4.08	2.91	0.02	100.00	7.14	
ut1881-13	74.88	0.16	14.28	1.39	0.00	0.40	1.87	4.15	2.85	0.01	100.00	3.27	
ut1881-14	74.36	0.22	14.74	1.35	0.08	0.43	1.80	4.19	2.78	0.05	100.00	2.89	
ut1881-15	74.79	0.26	14.30	1.36	0.02	0.37	1.87	4.17	2.87	0.00	100.00	4.40	
ut1881-16	72.74	0.35	16.29	1.33	0.10	0.49	1.84	4.10	2.77	0.00	100.00	4.53	
ut1881-17	74.16	0.20	14.64	1.30	0.05	0.50	1.88	4.13	3.08	0.05	100.00	7.52	
ut1881-18	74.51	0.32	14.38	1.47	0.02	0.44	1.80	4.16	2.84	0.07	100.00	4.78	
ut1881-19	74.92	0.10	14.39	1.28	0.03	0.49	1.76	4.03	2.97	0.03	100.00	6.02	
ut1881-20	74.21	0.21	14.79	1.42	0.00	0.46	1.87	3.96	3.00	0.07	100.00	6.80	
ut1881-21	74.81	0.25	14.29	1.44	0.03	0.40	1.81	4.23	2.73	0.01	100.00	5.67	
ut1883-1	74.27	0.17	14.89	1.35	0.00	0.43	1.82	4.20	2.83	0.04	100.00	6.18	Aug. 1 2006
ut1883-2	73.76	0.28	14.83	1.48	0.02	0.45	1.78	4.32	2.99	0.11	100.00	4.53	
ut1883-3	73.97	0.17	14.88	1.50	0.05	0.45	1.78	4.15	2.98	0.06	100.00	3.77	

	ut1883-4	74.19	0.12	14.91	1.45	0.04	0.50	1.79	4.05	2.89	0.06	100.00	6.31	
	ut1883-5	74.26	0.15	14.70	1.41	0.04	0.46	1.79	4.23	2.92	0.03	100.00	6.34	
	ut1883-6	73.53	0.21	15.15	1.65	0.05	0.50	1.83	3.98	3.03	0.07	100.00	9.94	
	ut1883-8	73.46	0.15	15.08	1.61	0.00	0.54	2.00	4.22	2.81	0.13	100.00	6.98	
	ut1883-9	74.34	0.13	14.79	1.61	0.03	0.48	1.81	3.97	2.82	0.02	100.00	6.61	
	ut1883-10	73.77	0.03	15.24	1.39	0.04	0.31	1.94	4.44	2.72	0.11	100.00	4.35	
	ut1883-13	74.11	0.19	14.81	1.51	0.03	0.49	1.76	4.10	2.98	0.02	100.00	6.32	
	ut1883-14	74.06	0.14	14.91	1.42	0.06	0.50	1.74	4.14	2.99	0.04	100.00	6.40	
	ut1883-15	73.70	0.14	15.11	1.45	0.03	0.42	1.98	4.26	2.88	0.02	100.00	6.90	
	ut1883-18	74.10	0.17	14.93	1.47	0.03	0.44	1.77	4.07	2.98	0.04	100.00	5.57	
	ut1883-19	74.14	0.16	14.96	1.34	0.04	0.45	1.83	4.15	2.90	0.04	100.00	6.90	
	ut1883-20	74.14	0.28	14.86	1.51	0.06	0.40	1.87	3.87	2.93	0.09	100.00	6.59	
	ut1883-1	74.28	0.25	14.50	1.48	0.01	0.43	1.81	4.25	2.96	0.03	100.00	5.29	Mar. 16 2005
	ut1883-2	74.65	0.29	14.24	1.52	0.00	0.41	1.80	4.07	2.96	0.06	100.00	5.23	
	ut1883-3	74.69	0.19	14.20	1.44	0.00	0.47	1.91	4.11	2.93	0.06	100.00	5.60	
	ut1883-4	74.04	0.15	14.75	1.44	0.05	0.43	1.74	4.42	2.95	0.02	100.00	5.21	
	ut1883-5	74.77	0.15	14.39	1.56	0.05	0.47	1.80	3.99	2.82	0.00	100.00	5.70	
	ut1883-6	74.21	0.20	14.79	1.48	0.08	0.48	1.77	3.96	2.99	0.04	100.00	6.71	
	ut1883-9	74.86	0.05	14.35	1.45	0.01	0.38	1.84	4.08	2.97	0.00	100.00	6.50	
	ut1883-10	74.45	0.12	14.70	1.51	0.07	0.45	1.79	4.00	2.86	0.06	100.00	5.94	
	ut1883-12	73.70	0.24	14.58	1.52	0.06	0.59	2.08	4.48	2.75	0.00	100.00	4.47	
	ut1883-13	74.78	0.16	14.29	1.43	0.07	0.41	1.81	4.04	2.98	0.04	100.00	4.64	
	ut1883-14	74.48	0.17	14.48	1.35	0.05	0.44	1.85	4.13	3.03	0.02	100.00	4.06	
	ut1883-15	74.67	0.11	14.49	1.49	0.05	0.39	1.87	3.95	2.89	0.09	100.00	6.78	
	ut1883-16	75.06	0.21	14.00	1.37	0.06	0.40	1.66	4.17	2.98	0.09	100.00	4.21	
	ut1883-17	74.08	0.25	14.49	1.49	0.07	0.45	1.85	4.29	3.01	0.01	100.00	6.37	
	ut1883-18	74.30	0.26	14.57	1.46	0.00	0.46	1.92	4.15	2.86	0.02	100.00	6.07	
	ut1883-19	74.86	0.27	14.21	1.39	0.01	0.42	1.70	4.12	2.87	0.14	100.00	5.94	
	ut1883-20	74.49	0.17	14.47	1.53	0.06	0.37	1.95	4.05	2.87	0.05	100.00	6.20	
	ut1883-21	74.80	0.13	14.50	1.44	0.07	0.41	1.84	4.00	2.82	0.00	100.00	6.03	
	AVERAGE	74.42	0.22	14.66	1.38	0.04	0.43	1.86	4.07	2.87	0.04	100.00	5.73	
	STDEV	0.44	0.06	0.29	0.09	0.03	0.04	0.11	0.17	0.10	0.03	0.00	1.36	n=470
CB$_2$	**UA 1084-13**	74.29	0.09	15.17	1.41	0.07	0.44	1.97	3.76	2.75	0.06	100.00	6.07	Sept. 27 2005

UA 1084-14	74.37	0.11	15.30	1.35	0.02	0.43	1.92	3.70	2.74	0.06	100.00	7.31	
UA 1084-8	73.21	0.21	15.98	1.39	0.01	0.45	1.98	3.98	2.74	0.04	100.00	4.49	
Ua1084-2	74.38	0.25	14.61	1.52	0.06	0.47	1.89	3.95	2.80	0.06	100.00	5.01	June 22 2006
Ua1084-13	74.11	0.20	14.86	1.43	0.10	0.44	1.81	4.16	2.87	0.02	100.00	5.94	
Ua1084-12	73.94	0.32	14.85	1.47	0.06	0.44	1.86	4.21	2.79	0.04	100.00	3.64	
Ua1084-15	73.90	0.30	15.10	1.44	0.07	0.45	1.97	4.01	2.72	0.04	100.00	4.47	
Ua1084-17	74.31	0.20	14.59	1.44	0.07	0.42	1.86	4.08	2.99	0.04	100.00	4.11	
UA 1050-1	74.45	0.33	14.96	1.30	0.03	0.42	1.77	3.85	2.86	0.05	100.00	5.78	Sept. 27 2005
UA 1050-3	74.37	0.22	14.76	1.41	0.05	0.35	1.82	4.03	2.92	0.08	100.00	4.30	
Ua1050-4	74.85	0.20	14.53	1.38	0.05	0.42	1.77	3.80	2.93	0.05	100.00	4.56	June 22 2006
Ua1050-3	73.65	0.23	15.55	1.40	0.02	0.46	1.77	3.99	2.91	0.02	100.00	4.54	
Ua1050-15	74.26	0.26	14.51	1.56	0.03	0.39	1.96	3.92	3.08	0.03	100.00	1.37	
Ua1050-17	74.64	0.28	14.44	1.33	0.01	0.40	1.90	4.20	2.74	0.05	100.00	4.29	
AVERAGE	74.19	0.23	14.94	1.42	0.05	0.43	1.87	3.98	2.85	0.05	100.00	4.71	
STDEV	0.41	0.07	0.44	0.07	0.03	0.03	0.08	0.16	0.11	0.02	0.00	1.37	n=14
UA 1084-2	78.78	0.27	13.04	1.25	0.02	0.27	1.20	1.33	3.80	0.04	100.00	8.17	Sept. 27 2005
UA 1084-3	77.15	0.31	12.86	1.24	0.05	0.22	1.33	3.11	3.68	0.05	100.00	6.60	
UA 1084-4	77.67	0.12	13.19	0.71	0.04	0.09	1.24	3.30	3.58	0.06	100.00	5.57	
UA 1084-9	75.97	0.41	13.57	1.21	0.01	0.32	1.51	3.02	3.93	0.06	100.00	7.00	
UA 1084-10	75.92	0.31	13.68	1.15	0.03	0.34	1.60	2.93	3.98	0.04	100.00	7.31	
UA 1084-11	76.15	0.29	13.75	1.22	0.03	0.23	1.25	3.30	3.74	0.04	100.00	6.36	
UA 1084-16	77.42	0.18	13.08	1.02	0.02	0.22	1.42	2.99	3.58	0.08	100.00	6.35	
UA 1084-17	77.66	0.19	12.97	0.99	0.07	0.18	1.30	3.12	3.50	0.02	100.00	7.11	
UA 1084-18	78.52	0.15	13.05	1.03	0.09	0.20	1.23	1.86	3.83	0.04	100.00	7.29	
UA 1084-19	78.29	0.17	13.25	1.16	0.05	0.18	1.36	1.72	3.81	0.01	100.00	7.65	
UA 1084-20	78.54	0.11	13.17	1.11	0.10	0.23	1.24	1.81	3.68	0.01	100.00	8.24	
Ua1084-4	79.14	0.20	12.80	1.18	0.07	0.27	1.30	1.91	3.09	0.04	100.00	4.68	June 22 2006
Ua1084-6	78.61	0.24	12.74	1.10	0.04	0.16	1.28	1.74	4.05	0.04	100.00	6.41	
Ua1084-7	78.85	0.22	12.55	1.12	0.01	0.17	1.27	1.83	3.94	0.03	100.00	5.62	
Ua1084-8	77.95	0.14	12.68	1.16	0.08	0.25	1.23	2.82	3.66	0.03	100.00	5.78	
Ua1084-9	77.82	0.23	12.78	1.15	0.09	0.23	1.28	2.70	3.63	0.08	100.00	5.35	
Ua1084-10	76.62	0.17	13.59	1.10	0.06	0.27	1.45	3.79	2.91	0.04	100.00	5.58	
Ua1084-11	76.07	0.17	13.83	1.00	0.08	0.30	1.66	3.81	3.00	0.06	100.00	4.99	
Ua1084-14	76.00	0.27	13.17	1.32	0.00	0.21	1.37	3.26	4.14	0.26	100.00	6.95	

	Ua1084-16	78.22	0.15	12.76	0.74	0.00	0.07	1.24	3.52	3.27	0.01	100.00	5.23	
	Ua1084-18	78.01	0.31	12.59	0.68	0.03	0.16	1.06	3.08	4.08	0.00	100.00	6.48	
	UA 1050-4	79.11	0.27	13.08	0.49	0.05	0.22	1.04	1.87	3.86	0.00	100.00	5.80	Sept. 27 2005
	UA 1050-5	79.16	0.31	13.04	0.53	0.05	0.29	1.08	1.87	3.67	0.01	100.00	4.77	
	UA 1050-7	78.28	0.24	12.98	1.13	0.07	0.27	1.34	2.10	3.57	0.03	100.00	6.39	
	UA 1050-8	78.05	0.21	12.89	1.10	0.07	0.27	1.30	2.37	3.72	0.01	100.00	4.92	
	UA 1050-9	78.36	0.24	12.89	1.04	0.00	0.28	1.28	2.12	3.73	0.06	100.00	6.67	
	UA 1050-11	78.04	0.12	12.96	1.23	0.05	0.20	1.34	2.60	3.40	0.08	100.00	8.38	
	UA 1050-12	77.92	0.22	12.83	1.14	0.07	0.30	1.49	2.69	3.29	0.05	100.00	7.97	
	UA 1050-13	77.75	0.24	13.24	1.08	0.05	0.21	1.42	2.65	3.33	0.04	100.00	8.00	
	UA 1050-16	79.09	0.24	13.05	1.18	0.00	0.24	1.42	1.52	3.21	0.05	100.00	7.75	
	UA 1050-17	79.18	0.19	13.32	1.19	0.00	0.24	1.24	1.49	3.13	0.02	100.00	7.39	
	UA 1050-18	78.62	0.13	13.06	1.11	0.06	0.22	1.03	2.17	3.57	0.04	100.00	7.61	
	Ua1050-1	80.38	0.25	10.94	0.84	0.02	0.15	0.38	2.89	4.11	0.04	100.00	5.57	June 22 2006
	Ua1050-5	79.24	0.24	12.74	0.34	0.00	0.20	0.94	2.27	4.03	0.00	100.00	5.83	
	Ua1050-8	77.78	0.19	12.66	0.49	0.04	0.22	1.06	3.20	4.33	0.02	100.00	2.59	
	Ua1050-9	77.60	0.24	12.62	0.92	0.07	0.16	0.77	3.26	4.30	0.05	100.00	5.30	
	Ua1050-10	78.39	0.24	12.43	0.94	0.09	0.23	0.85	3.42	3.41	0.01	100.00	4.39	
	Ua1050-11	77.46	0.18	12.93	1.20	0.05	0.22	1.45	2.76	3.70	0.06	100.00	5.90	
	Ua1050-12	78.35	0.30	12.16	1.10	0.04	0.18	1.08	2.82	3.92	0.04	100.00	5.30	
	Ua1050-13	79.36	0.27	12.07	1.12	0.00	0.20	0.96	2.29	3.66	0.07	100.00	5.48	
	Ua1050-14	77.96	0.25	12.59	1.09	0.00	0.24	1.44	2.65	3.76	0.01	100.00	8.30	
	AVERAGE	78.03	0.22	12.92	1.02	0.04	0.22	1.24	2.58	3.67	0.04	100.00	6.32	
	STDEV	1.03	0.06	0.50	0.23	0.03	0.06	0.24	0.67	0.34	0.04	0.00	1.28	n =42
KR	**UA1059-2**	72.54	0.22	15.74	1.65	0.06	0.60	2.48	4.50	2.18	0.03	100.00	3.70	Dec. 13 2005
	UA1059-3	72.45	0.20	15.63	1.72	0.08	0.60	2.60	4.41	2.28	0.02	100.00	6.11	
	UA1059-5	72.52	0.13	15.71	1.74	0.08	0.61	2.59	4.23	2.33	0.05	100.00	7.64	
	UA1059-6	72.87	0.22	15.70	1.69	0.00	0.60	2.58	4.03	2.24	0.07	100.00	6.07	
	Ua1059-8	73.64	0.20	15.68	1.64	0.07	0.56	2.40	3.55	2.26	0.01	100.00	5.69	
	Ua1059-9	73.10	0.24	15.64	1.65	0.05	0.53	2.43	3.99	2.32	0.05	100.00	7.40	
	UA1059-12	73.42	0.27	15.83	1.67	0.06	0.53	2.55	3.32	2.30	0.05	100.00	7.55	
	UA1059-13	72.98	0.19	15.95	1.67	0.03	0.54	2.51	3.75	2.29	0.08	100.00	8.19	
	UA1059-14	73.09	0.14	15.74	1.59	0.05	0.58	2.40	4.11	2.23	0.06	100.00	7.02	

UA1059-15	72.76	0.21	16.06	1.54	0.05	0.57	2.33	4.25	2.20	0.03	100.00	6.26	
UA1059-16	73.39	0.27	15.42	1.60	0.06	0.59	2.26	4.12	2.26	0.04	100.00	6.71	
UA1059-17	73.04	0.22	15.43	1.77	0.07	0.54	2.52	4.07	2.29	0.04	100.00	9.09	
UA1059-18	73.02	0.22	15.32	1.70	0.05	0.53	2.40	4.45	2.26	0.06	100.00	2.88	
UA1059-19	72.87	0.22	15.64	1.66	0.07	0.55	2.44	4.24	2.26	0.05	100.00	3.91	
UA1059-20	73.20	0.23	15.51	1.67	0.05	0.57	2.35	4.18	2.22	0.01	100.00	4.93	
UA1059-21	73.43	0.16	15.43	1.61	0.05	0.57	2.37	3.97	2.32	0.09	100.00	6.97	
UA1060-1	73.42	0.27	15.28	1.60	0.05	0.59	2.34	4.26	2.16	0.03	100.00	8.57	Dec. 13 2005
UA1060-2	73.07	0.12	15.89	1.71	0.06	0.54	2.42	3.98	2.19	0.02	100.00	5.67	
UA1060-3	72.99	0.21	15.53	1.70	0.02	0.55	2.53	4.12	2.31	0.04	100.00	8.94	
UA1060-4	73.15	0.25	15.75	1.71	0.11	0.64	2.45	3.79	2.10	0.06	100.00	7.17	
UA1060-5	73.41	0.19	15.45	1.66	0.04	0.53	2.30	4.18	2.18	0.05	100.00	6.21	
UA1060-6	72.96	0.21	15.75	1.72	0.03	0.63	2.48	4.07	2.10	0.04	100.00	5.63	
UA1060-7	73.24	0.26	15.54	1.61	0.06	0.55	2.34	4.17	2.20	0.02	100.00	6.54	
UA1060-8	73.46	0.26	15.72	1.69	0.05	0.59	2.33	3.68	2.22	0.01	100.00	6.00	
UA1060-9	73.04	0.18	15.64	1.71	0.05	0.55	2.54	4.18	2.04	0.06	100.00	7.36	
UA1060-10	73.18	0.20	15.68	1.50	0.11	0.57	2.39	4.08	2.27	0.02	100.00	6.38	
UA1060-11	73.57	0.18	15.64	1.60	0.01	0.56	2.34	4.01	2.05	0.05	100.00	7.16	
UA1060-12	73.10	0.29	15.65	1.57	0.05	0.56	2.37	4.08	2.29	0.03	100.00	6.34	
UA1060-13	73.08	0.26	15.56	1.65	0.01	0.60	2.39	4.27	2.16	0.03	100.00	4.63	
UA1060-14	72.87	0.22	15.51	1.78	0.06	0.59	2.40	4.26	2.28	0.03	100.00	6.34	
UA1060-15	73.33	0.23	15.74	1.70	0.01	0.56	2.39	3.68	2.31	0.06	100.00	8.21	
UA1060-17	72.96	0.22	15.70	1.68	0.07	0.53	2.36	4.16	2.29	0.03	100.00	5.57	
UA1060-20	73.02	0.25	15.64	1.78	0.09	0.64	2.50	3.77	2.28	0.02	100.00	9.16	
UA1068-1	72.42	0.26	15.63	1.73	0.08	0.64	2.47	4.44	2.29	0.02	100.00	4.61	Dec. 13 2005
UA1068-2	73.62	0.23	15.47	1.47	0.02	0.54	2.21	4.19	2.19	0.05	100.00	5.80	
UA1068-3	73.47	0.23	15.47	1.63	0.10	0.54	2.37	3.93	2.22	0.04	100.00	5.59	
UA1068-6	73.20	0.24	15.48	1.63	0.09	0.62	2.41	4.12	2.17	0.04	100.00	5.01	
UA1068-8	73.43	0.23	15.52	1.63	0.00	0.47	2.28	4.24	2.13	0.07	100.00	2.32	
UA1068-9	73.05	0.25	15.76	1.67	0.06	0.61	2.32	4.09	2.15	0.04	100.00	4.75	
UA1068-10	73.54	0.20	15.77	1.58	0.07	0.50	2.28	4.00	2.07	0.00	100.00	2.73	
UA1068-11	73.60	0.20	15.56	1.54	0.03	0.56	2.29	3.89	2.29	0.02	100.00	6.53	
UA1068-12	72.71	0.19	15.83	1.71	0.06	0.62	2.46	4.23	2.16	0.05	100.00	4.18	
UA1068-13	73.71	0.17	15.48	1.63	0.05	0.55	2.33	3.80	2.19	0.08	100.00	6.42	

UA1068-14	73.32	0.26	15.61	1.57	0.08	0.55	2.21	4.21	2.13	0.05	100.00	4.99	
UA1068-15	73.29	0.20	15.66	1.68	0.08	0.53	2.41	4.02	2.10	0.02	100.00	5.80	
UA1069-1	73.66	0.26	15.39	1.57	0.03	0.50	2.26	4.16	2.14	0.04	100.00	4.90	Dec. 13 2005
UA1069-2	73.41	0.20	15.28	1.52	0.02	0.51	2.29	4.51	2.19	0.08	100.00	5.14	
UA1069-3	73.23	0.15	15.62	1.59	0.05	0.55	2.49	3.98	2.27	0.06	100.00	5.85	
UA1069-4	73.00	0.22	15.56	1.75	0.06	0.59	2.38	4.16	2.22	0.05	100.00	9.46	
UA1069-5	73.85	0.16	15.39	1.48	0.05	0.53	2.18	4.07	2.24	0.05	100.00	4.75	
UA1069-6	73.40	0.25	15.61	1.63	0.04	0.53	2.33	3.96	2.25	0.00	100.00	7.56	
UA1069-7	72.74	0.16	15.43	1.80	0.09	0.67	2.54	4.37	2.18	0.02	100.00	4.67	
UA1069-9	73.29	0.24	15.59	1.63	0.08	0.56	2.45	4.02	2.10	0.04	100.00	4.57	
UA1069-10	73.23	0.20	15.61	1.57	0.07	0.58	2.49	4.05	2.17	0.03	100.00	5.43	
UA1069-11	72.57	0.25	16.08	1.71	0.06	0.61	2.46	3.96	2.23	0.08	100.00	5.15	
UA1069-12	72.84	0.21	15.46	1.80	0.06	0.65	2.54	4.29	2.12	0.04	100.00	4.78	
UA1069-13	73.06	0.21	15.56	1.67	0.07	0.56	2.44	4.19	2.20	0.05	100.00	5.85	
UA1069-14	73.17	0.19	15.77	1.61	0.03	0.50	2.34	4.19	2.16	0.03	100.00	5.24	
UA1069-15	73.31	0.20	15.79	1.57	0.05	0.53	2.43	3.77	2.29	0.06	100.00	6.91	
UT 1676-1	72.94	0.25	15.75	1.56	0.11	0.52	2.27	4.38	2.19	0.02	100.00	6.07	Dec. 13 2005
UT 1676-2	72.46	0.23	16.41	1.69	0.04	0.55	2.38	4.10	2.14	0.01	100.00	5.91	
UT 1676-4	72.61	0.22	15.63	1.65	0.04	0.51	2.56	4.40	2.26	0.10	100.00	5.43	
UT 1676-5	73.36	0.16	15.72	1.58	0.06	0.50	2.43	3.90	2.26	0.03	100.00	6.94	
UT 1676-6	73.51	0.18	15.35	1.56	0.07	0.57	2.33	4.16	2.16	0.10	100.00	5.82	
UT 1676-9	72.76	0.18	15.69	1.63	0.10	0.53	2.36	4.38	2.31	0.05	100.00	4.16	
UT 1676-10	73.10	0.18	15.90	1.66	0.09	0.59	2.43	3.63	2.37	0.04	100.00	8.30	
UT 1676-11	73.22	0.21	15.44	1.59	0.09	0.55	2.57	4.00	2.23	0.10	100.00	6.27	
UT 1676-12	72.79	0.17	15.72	1.64	0.07	0.57	2.44	4.29	2.24	0.06	100.00	5.75	
UT 1676-13	72.89	0.27	15.50	1.66	0.05	0.60	2.41	4.14	2.42	0.06	100.00	9.43	
UT 1676-15	72.84	0.17	15.46	1.61	0.06	0.52	2.46	4.55	2.28	0.03	100.00	5.65	
UT 1676-16	73.00	0.21	15.52	1.56	0.05	0.52	2.44	4.40	2.23	0.05	100.00	3.19	
UT 1676-17	72.25	0.24	15.89	1.68	0.00	0.58	2.46	4.63	2.20	0.05	100.00	3.12	
UT 1676-18	72.74	0.20	15.51	1.71	0.10	0.53	2.47	4.41	2.27	0.07	100.00	6.79	
UT 1676-19	73.46	0.27	15.87	1.70	0.04	0.57	2.41	3.41	2.24	0.03	100.00	6.07	
UT 1676-20	72.55	0.22	16.30	1.72	0.04	0.57	2.51	3.92	2.13	0.04	100.00	6.07	
UT 1676-3	73.11	0.15	15.47	1.48	0.09	0.55	2.24	4.45	2.34	0.13	100.00	4.20	Aug. 1 2004
UT 1676-4	73.10	0.14	15.70	1.59	0.05	0.57	2.29	4.15	2.36	0.06	100.00	8.63	

UT 1676-5	72.27	0.14	15.88	1.66	0.03	0.66	2.46	4.42	2.45	0.04	100.00	2.98
UT 1676-6	72.06	0.12	15.96	1.79	0.06	0.53	2.53	4.55	2.38	0.03	100.00	4.89
UT 1676-8	73.05	0.22	15.57	1.64	0.02	0.51	2.47	4.33	2.17	0.02	100.00	5.93
UT 1676-9	71.72	0.29	16.08	1.75	0.09	0.64	2.57	4.51	2.30	0.04	100.00	7.06
UT 1676-10	72.97	0.22	15.57	1.53	0.04	0.58	2.40	4.36	2.29	0.03	100.00	3.97
UT 1676-11	73.03	0.45	15.20	1.66	0.01	0.56	2.60	4.30	2.18	0.00	100.00	3.99
UT 1676-12	73.08	0.20	15.38	1.75	0.08	0.51	2.46	4.35	2.18	0.01	100.00	5.70
UT 1676-13	73.42	0.15	15.33	1.56	0.06	0.50	2.30	4.27	2.31	0.09	100.00	5.04
UT 1676-14	72.61	0.37	15.63	1.68	0.05	0.60	2.55	4.25	2.23	0.03	100.00	7.04
UT 1676-15	72.44	0.26	16.10	1.62	0.00	0.63	2.54	4.11	2.30	0.00	100.00	5.94
UT 1676-16	72.32	0.18	15.98	1.66	0.07	0.64	2.54	4.32	2.29	0.01	100.00	6.18
UT 1676-17	73.02	0.24	15.40	1.65	0.02	0.58	2.46	4.32	2.24	0.06	100.00	6.12
UT 1676-19	72.36	0.31	15.90	1.75	0.06	0.53	2.39	4.50	2.20	0.00	100.00	5.00
UT 1676-20	72.58	0.15	15.85	1.76	0.03	0.64	2.49	4.24	2.18	0.09	100.00	4.61
UT 1676-21	71.96	0.31	16.28	1.88	0.06	0.57	2.56	4.16	2.20	0.01	100.00	6.62
UT 1676-22	73.23	0.14	15.30	1.49	0.04	0.58	2.29	4.60	2.33	0.01	100.00	4.19
UT 1676-24	72.65	0.09	16.05	1.70	0.01	0.61	2.43	4.15	2.31	0.00	100.00	5.84
UT 1676-25	72.21	0.18	15.91	1.51	0.06	0.55	2.82	4.59	2.18	0.00	100.00	4.89
ut1876-2	73.05	0.11	15.57	1.64	0.01	0.58	2.43	4.32	2.18	0.11	100.00	6.09
ut1876-3	72.36	0.12	15.65	1.87	0.03	0.50	2.56	4.67	2.19	0.05	100.00	3.71
ut1876-5	73.22	0.18	15.54	1.66	0.03	0.54	2.40	4.18	2.22	0.03	100.00	9.58
ut1876-7	72.43	0.18	15.71	1.81	0.04	0.65	2.61	4.42	2.13	0.02	100.00	5.16
ut1876-10	72.45	0.13	15.96	1.73	0.10	0.60	2.52	4.30	2.20	0.0[illegible]	100.00	8.78
ut1876-11	72.51	0.10	15.80	1.63	0.07	0.62	2.51	4.56	2.17	0.04	100.00	5.21
ut1876-12	71.81	0.10	16.30	1.66	0.06	0.57	2.59	4.60	2.21	0.09	100.00	9.10
ut1876-13	71.87	0.19	15.96	1.75	0.04	0.72	2.66	4.60	2.17	0.02	100.00	2.75
ut1876-14	73.15	0.17	15.67	1.65	0.04	0.58	2.36	4.18	2.21	0.00	100.00	5.92
ut1876-16	71.90	0.16	16.09	1.83	0.03	0.62	2.66	4.44	2.22	0.04	100.00	7.49
ut1876-17	72.94	0.12	15.79	1.45	0.08	0.58	2.41	4.50	2.08	0.05	100.00	5.62
ut1876-18	72.05	0.15	15.77	1.89	0.03	0.77	2.57	4.52	2.22	0.04	100.00	8.55
ut1876-19	71.96	0.15	16.11	1.70	0.05	0.65	2.52	4.54	2.21	0.10	100.00	7.93
ut1876-20	73.20	0.18	15.38	1.60	0.05	0.54	2.29	4.40	2.28	0.07	100.00	6.50
ut1876-21	72.07	0.24	15.66	1.98	0.09	0.82	2.38	4.36	2.36	0.03	100.00	7.00
ut1876-22	72.29	0.18	15.69	1.81	0.02	0.58	2.46	4.63	2.20	0.12	100.00	4.38

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ut1876-23	72.32	0.14	15.78	1.68	0.03	0.62	2.86	4.73	1.84	0.00	100.00	7.97	
ut1876-1	72.52	0.22	15.80	1.66	0.05	0.73	2.50	4.34	2.16	0.02	100.00	5.05	Mar. 15 2005
ut1876-2	72.92	0.15	15.86	1.60	0.05	0.53	2.38	4.12	2.27	0.13	100.00	6.97	
ut1876-3	72.92	0.28	15.72	1.61	0.09	0.58	2.46	4.15	2.18	0.03	100.00	5.35	
ut1876-4	72.58	0.22	16.10	1.69	0.05	0.57	2.38	4.05	2.34	0.03	100.00	6.03	
ut1876-5	73.03	0.25	15.57	1.54	0.04	0.64	2.50	4.28	2.09	0.06	100.00	5.22	
ut1876-7	72.99	0.28	15.41	1.52	0.00	0.58	2.47	4.49	2.26	0.00	100.00	1.34	
ut1876-8	73.15	0.08	15.48	1.62	0.05	0.62	2.45	4.32	2.20	0.03	100.00	6.06	
ut1876-9	72.77	0.24	15.53	1.70	0.09	0.64	2.62	4.10	2.31	0.00	100.00	7.53	
ut1876-10	72.16	0.19	15.96	1.73	0.04	0.65	2.73	4.38	2.15	0.01	100.00	6.23	
ut1876-11	73.12	0.31	15.29	1.66	0.11	0.63	2.50	4.06	2.23	0.08	100.00	7.13	
ut1876-12	73.10	0.12	15.81	1.55	0.04	0.64	2.39	4.08	2.25	0.04	100.00	6.36	
ut1876-13	72.03	0.27	15.78	1.77	0.05	0.64	2.67	4.63	2.12	0.04	100.00	4.32	
ut1876-14	72.80	0.21	15.46	1.71	0.06	0.64	2.58	4.33	2.20	0.00	100.00	7.69	
ut1876-15	72.85	0.21	15.75	1.51	0.04	0.54	2.44	4.38	2.28	0.02	100.00	7.53	
ut1876-16	72.91	0.17	15.62	1.53	0.06	0.56	2.49	4.36	2.29	0.01	100.00	5.47	
ut1876-17	72.49	0.07	15.77	1.67	0.07	0.57	2.51	4.60	2.21	0.05	100.00	5.92	
ut1876-18	73.10	0.11	15.57	1.64	0.06	0.56	2.37	4.26	2.34	0.00	100.00	4.45	
ut1876-19	73.26	0.22	15.26	1.78	0.04	0.58	2.40	4.26	2.15	0.05	100.00	3.57	
ut1876-21	73.54	0.04	15.42	1.66	0.08	0.54	2.29	4.18	2.17	0.09	100.00	7.50	
ut1876-22	73.02	0.17	15.41	1.68	0.03	0.63	2.44	4.38	2.23	0.00	100.00	6.17	
ut1876-23	73.22	0.19	15.31	1.65	0.00	0.61	2.43	4.38	2.18	0.03	100.00	3.66	
ut1876-25	72.75	0.17	15.84	1.52	0.02	0.51	2.38	4.50	2.28	0.02	100.00	7.09	
UA1210-1	73.01	0.20	15.64	1.52	0.08	0.58	2.46	4.33	2.17	0.01	100.00	4.78	Sept. 27 2006
UA1210-2	72.84	0.20	15.64	1.70	0.00	0.60	2.65	4.12	2.23	0.03	100.00	6.93	
UA1210-3	71.84	0.30	16.86	1.56	0.06	0.57	2.59	3.94	2.22	0.06	100.00	7.12	
UA1210-4	72.80	0.14	15.47	1.51	0.04	0.60	2.40	4.73	2.23	0.07	100.00	8.30	
UA1210-5	72.98	0.15	15.41	1.62	0.06	0.58	2.57	4.31	2.29	0.04	100.00	6.10	
UA1210-7	72.92	0.19	15.52	1.69	0.05	0.58	2.63	4.19	2.18	0.04	100.00	8.59	
UA1210-8	73.09	0.23	15.53	1.54	0.09	0.56	2.56	4.22	2.15	0.02	100.00	5.24	
UA1210-9	72.70	0.24	15.59	1.81	0.07	0.64	2.59	4.11	2.24	0.00	100.00	8.39	
UA1210-10	73.42	0.21	15.52	1.50	0.01	0.48	2.40	4.32	2.13	0.01	100.00	5.18	
UA1210-12	72.79	0.27	15.49	1.71	0.05	0.63	2.68	4.17	2.15	0.05	100.00	6.41	
UA1210-13	72.37	0.26	15.69	1.66	0.07	0.73	2.68	4.37	2.17	0.01	100.00	5.20	

	UA1210-15	72.92	0.20	15.39	1.59	0.08	0.[illegible]	2.46	4.50	2.23	0.02	100.00	4.90	
	UA1210-16	73.12	0.23	15.31	1.56	0.08	0.56	2.48	4.20	2.41	0.04	100.00	5.78	
	UA1210-17	72.78	0.25	15.55	1.67	0.09	0.69	2.41	4.29	2.22	0.05	100.00	5.93	
	UA1210-18	72.96	0.24	15.33	1.65	0.04	0.59	2.60	4.30	2.25	0.04	100.00	6.33	
	UA1210-19	73.09	0.21	15.31	1.55	0.09	0.58	2.35	4.58	2.18	0.05	100.00	6.43	
	UA1210-20	73.86	0.24	15.32	1.54	0.04	0.61	2.40	3.86	2.12	0.01	100.00	3.27	
	UA1210-21	73.07	0.25	15.58	1.62	0.05	0.51	2.53	4.21	2.16	0.02	100.00	6.53	
	UA1210-22	72.70	0.24	15.64	1.64	0.03	0.55	2.57	4.31	2.26	0.06	100.00	2.94	
	UA1210-23	72.90	0.23	15.52	1.66	0.01	0.60	2.62	4.24	2.20	0.02	100.00	8.55	
	Average	72.92	0.21	15.66	1.65	0.05	0.58	2.45	4.22	2.22	0.04	100.00	5.97	
	SD	0.45	0.06	0.25	0.09	0.03	-0.05	0.12	0.25	0.08	0.03	0.00	1.60	n=154
AC	UA1062-4	78.31	0.21	12.32	1.11	0.04	0.23	1.38	3.57	2.65	0.18	100.00	4.01	Apr. 27 2006
	UA1062-5	77.22	0.16	12.82	1.30	0.07	0.25	1.33	3.87	2.73	0.26	100.00	5.48	
	UA1062-6	77.33	0.17	12.96	1.24	0.06	0.27	1.55	3.80	2.51	0.10	100.00	4.64	
	UA1062-7	77.61	0.08	12.86	1.07	0.04	0.25	1.35	3.96	2.59	0.19	100.00	4.09	
	UA1062-8	76.97	0.13	13.10	1.22	0.06	0.21	1.38	3.97	2.68	0.28	100.00	6.43	
	UA1062-10	77.39	0.17	12.78	1.22	0.07	0.29	1.62	3.87	2.41	0.19	100.00	6.04	
	UA1062-11	77.80	0.21	12.47	1.16	0.12	0.30	1.49	3.86	2.39	0.20	100.00	4.15	
	UA1062-12	77.51	0.15	12.83	1.07	0.05	0.25	1.39	3.92	2.71	0.12	100.00	3.27	
	UA1062-13	77.76	0.23	12.71	1.11	0.07	0.25	1.39	3.71	2.57	0.20	100.00	5.91	
	UA1062-17	79.47	0.18	12.15	0.98	0.08	0.24	1.08	2.83	2.90	0.09	100.00	5.71	
	UA1062-19	77.79	0.20	12.55	1.10	0.05	0.27	1.27	3.89	2.71	0.16	100.00	6.29	
	UA1062-1	78.00	0.16	12.60	1.16	0.05	0.27	1.50	3.61	2.45	0.19	100.00	5.88	December 13th 2005
	UA1062-2	77.81	0.18	12.67	1.17	0.08	0.20	1.41	3.52	2.75	0.21	100.00	6.20	
	UA1062-3	78.14	0.23	12.44	1.15	0.02	0.22	1.42	3.58	2.66	0.15	100.00	7.24	
	UA1062-5	78.40	0.10	12.75	1.09	0.05	0.23	1.43	2.86	2.92	0.17	100.00	8.98	
	UA1062-6	78.08	0.22	12.74	1.13	0.06	0.24	1.42	3.12	2.80	0.19	100.00	6.16	
	UA1062-7	77.78	0.17	12.63	1.24	0.06	0.31	1.50	3.37	2.76	0.18	100.00	7.73	
	UA1062-8	77.90	0.17	12.45	1.13	0.03	0.20	1.42	3.84	2.69	0.18	100.00	5.95	
	UA1062-9	78.43	0.20	12.44	1.05	0.04	0.23	1.30	3.42	2.69	0.20	100.00	5.53	
	UA1062-10	78.50	0.20	12.33	1.07	0.00	0.25	1.31	3.49	2.59	0.25	100.00	5.31	
	UA1062-11	77.33	0.21	13.06	1.19	0.05	0.29	1.40	3.43	2.81	0.23	100.00	8.48	
	UA1062-12	76.93	0.24	13.66	1.21	0.05	0.29	1.53	3.07	2.76	0.28	100.00	8.94	

UA1062-16	76.42	0.12	13.73	1.24	0.06	0.26	1.34	3.75	2.88	0.20	100.00	5.55	
UA1062-17	78.27	0.20	12.61	1.14	0.08	0.27	1.36	3.28	2.56	0.22	100.00	5.60	
UA1062-18	77.86	0.18	12.73	1.17	0.11	0.24	1.41	3.53	2.57	0.20	100.00	6.39	
UA1062-19	77.63	0.21	12.78	0.96	0.00	0.32	1.44	3.75	2.73	0.16	100.00	4.41	
UA1062-20	77.97	0.17	12.53	1.11	0.06	0.19	1.41	3.81	2.50	0.25	100.00	6.42	
UA1062-21	78.14	0.12	12.39	1.14	0.07	0.23	1.38	3.72	2.57	0.25	100.00	5.25	
ut1877-1	77.51	0.11	12.90	1.20	0.00	0.24	1.37	3.75	2.77	0.15	100.00	7.93	Aug-04
ut1877-2	77.61	0.15	13.00	1.12	0.06	0.21	1.38	3.66	2.63	0.19	100.00	5.75	
ut1877-3	77.36	0.16	12.90	1.13	0.10	0.25	1.50	3.85	2.49	0.26	100.00	6.18	
ut1877-6	77.77	0.18	12.63	1.18	0.06	0.29	1.37	3.80	2.57	0.16	100.00	5.49	
ut1877-9	77.60	0.05	12.81	1.25	0.03	0.27	1.51	3.64	2.62	0.22	100.00	6.61	
ut1877-11	77.02	0.09	12.95	1.28	0.04	0.27	1.49	4.08	2.54	0.24	100.00	7.36	
ut1877-12	77.61	0.11	12.75	1.25	0.05	0.24	1.48	3.75	2.64	0.12	100.00	7.97	
ut1877-13	76.88	0.04	13.40	1.17	0.06	0.24	1.58	3.76	2.62	0.25	100.00	6.31	
ut1877-14	76.42	0.13	13.44	1.34	0.08	0.31	1.59	3.88	2.59	0.22	100.00	5.09	
ut1877-15	77.50	0.03	13.05	1.15	0.07	0.25	1.44	3.69	2.56	0.26	100.00	5.91	
ut1877-16	77.28	0.26	12.78	1.23	0.06	0.28	1.44	3.89	2.60	0.19	100.00	5.89	
ut1877-18	77.62	0.08	12.88	1.15	0.03	0.24	1.46	3.76	2.52	0.25	100.00	6.19	
ut1877-19	77.27	0.26	12.87	1.10	0.08	0.24	1.46	3.86	2.71	0.15	100.00	8.05	
ut1877-20	77.24	0.08	13.17	1.16	0.03	0.21	1.37	3.90	2.72	0.11	100.00	5.72	
UT 1665-1	77.84	0.22	12.58	1.21	0.01	0.27	1.56	3.56	2.54	0.20	100.00	8.19	Dec. 13 2006
UT 1665-2	77.31	0.17	12.73	1.19	0.11	0.24	1.60	3.84	2.56	0.25	100.00	6.34	
UT 1665-3	77.86	0.18	12.64	1.13	0.08	0.25	1.58	3.52	2.56	0.19	100.00	6.85	
UT 1665-4	77.44	0.18	12.77	1.18	0.06	0.26	1.57	3.71	2.61	0.23	100.00	6.29	
UT 1665-5	77.55	0.23	12.79	1.20	0.06	0.29	1.60	3.37	2.73	0.18	100.00	7.53	
UT 1665-6	77.51	0.16	12.72	1.20	0.06	0.30	1.55	3.57	2.76	0.17	100.00	7.29	
UT 1665-7	77.70	0.19	12.61	1.17	0.04	0.32	1.61	3.42	2.73	0.22	100.00	6.49	
UT 1665-8	77.55	0.29	12.92	1.18	0.05	0.27	1.58	3.42	2.55	0.20	100.00	7.30	
UT 1665-9	78.13	0.20	12.55	1.17	0.00	0.23	1.49	3.44	2.61	0.16	100.00	6.74	
UT 1665-10	78.30	0.22	12.73	1.13	0.07	0.25	1.50	2.95	2.64	0.21	100.00	6.75	
UT 1665-11	76.98	0.17	12.94	1.15	0.09	0.27	1.38	3.95	2.87	0.20	100.00	7.61	
UT 1665-12	77.35	0.15	13.01	1.08	0.04	0.27	1.37	3.76	2.76	0.19	100.00	6.39	
UT 1665-13	77.82	0.15	12.62	1.19	0.10	0.31	1.55	3.47	2.63	0.17	100.00	7.40	
UT 1665-14	78.24	0.15	12.31	1.14	0.03	0.29	1.55	3.53	2.48	0.27	100.00	7.70	

	UT 1665-15	77.88	0.16	12.49	1.13	0.02	0.30	1.50	3.63	2.62	0.26	100.00	7.22	
	UT 1665-16	77.60	0.24	12.94	1.18	0.05	0.31	1.52	3.25	2.67	0.24	100.00	6.85	
	UT 1665-17	77.78	0.18	12.57	1.16	0.00	0.27	1.43	3.83	2.57	0.21	100.00	6.27	
	UT 1665-18	77.68	0.18	12.76	1.09	0.08	0.28	1.46	3.56	2.65	0.25	100.00	5.34	
	UT 1665-19	77.41	0.09	13.04	1.26	0.09	0.22	1.45	3.66	2.60	0.18	100.00	5.03	
	UT 1665-20	77.17	0.20	12.78	1.18	0.04	0.27	1.71	3.64	2.82	0.19	100.00	6.41	
	Average	77.65	0.17	12.78	1.16	0.05	0.26	1.46	3.62	2.65	0.20	100.00	6.33	
	SD	0.50	0.06	0.30	0.07	0.03	0.03	0.10	0.27	0.12	0.04	0.00	1.19	n = 62
SR	**UA1058-1**	76.24	0.12	13.40	1.18	0.06	0.33	1.87	3.87	2.74	0.20	100.00	5.36	Dec. 12 2005
	UA1058-2	76.27	0.12	13.35	1.29	0.04	0.34	1.88	3.86	2.70	0.16	100.00	5.72	
	UA1058-3	76.96	0.15	13.36	1.18	0.12	0.31	1.81	3.45	2.53	0.14	100.00	6.27	
	UA1058-4	76.52	0.20	13.07	1.30	0.03	0.41	1.97	3.79	2.53	0.17	100.00	6.48	
	UA1058-5	76.86	0.15	13.25	1.33	0.04	0.33	1.85	3.65	2.43	0.10	100.00	6.17	
	UA1058-6	76.60	0.17	13.32	1.20	0.05	0.30	1.79	3.90	2.52	0.16	100.00	6.01	
	UA1058-7	76.68	0.22	13.35	1.19	0.08	0.32	1.79	3.71	2.53	0.14	100.00	4.98	
	UA1058-8	76.17	0.13	13.77	1.25	0.06	0.30	1.84	3.66	2.65	0.17	100.00	6.53	
	UA1058-9	76.56	0.16	13.42	1.21	0.07	0.32	1.79	3.64	2.67	0.15	100.00	4.60	
	UA1058-10	76.57	0.14	13.41	1.17	0.09	0.31	1.87	3.71	2.60	0.14	100.00	6.22	
	UA1058-12	76.67	0.13	13.18	1.19	0.10	0.37	1.87	3.68	2.64	0.16	100.00	5.94	
	UA1058-13	76.[illegible]7	0.15	13.28	1.25	0.08	0.32	1.86	3.54	2.60	0.16	100.00	7.02	
	UA1058-14	76.93	0.16	13.31	1.17	0.07	0.30	1.85	3.53	2.53	0.15	100.00	7.13	
	UA1058-15	76.56	0.25	13.39	1.21	0.08	0.36	1.92	3.49	2.59	0.14	100.00	6.96	
	UA1058-16	76.40	0.10	13.62	1.25	0.03	0.37	1.93	3.55	2.60	0.16	100.00	7.38	
	UA1058-17	76.23	0.16	13.45	1.25	0.06	0.32	1.86	3.79	2.73	0.15	100.00	6.62	
	UA1058-18	76.60	0.16	13.33	1.24	0.05	0.38	1.95	3.59	2.55	0.14	100.00	6.61	
	UA1058-19	76.94	0.08	13.16	1.25	0.09	0.34	1.84	3.52	2.59	0.18	100.00	7.15	
	UA1058-20	76.38	0.14	13.50	1.28	0.01	0.33	1.91	3.65	2.64	0.16	100.00	6.47	
	UA1058-21	76.79	0.12	13.37	1.31	0.03	0.35	1.91	3.39	2.57	0.16	100.00	6.29	
	UA1058-22	77.88	0.19	12.47	1.15	0.08	0.22	1.34	3.94	2.59	0.13	100.00	7.54	
	UA1058-23	78.18	0.20	12.46	1.11	0.10	0.21	1.30	3.82	2.50	0.13	100.00	7.80	
	UA1058-24	76.56	0.19	13.37	1.19	0.11	0.38	1.94	3.42	2.65	0.19	100.00	5.47	
	UA1058-25	76.74	0.13	13.44	1.14	0.09	0.32	1.77	3.58	2.63	0.16	100.00	5.82	
	UA1073-1	76.34	0.14	13.65	1.31	0.07	0.36	1.82	3.60	2.53	0.19	100.00	6.06	Mar. 27 2006

UA1073-2	76.56	0.11	13.55	1.32	0.10	0.30	1.74	3.60	2.55	0.17	100.00	5.69
UA1073-3	76.35	0.17	13.36	1.28	0.12	0.35	1.91	3.69	2.59	0.17	100.00	5.72
UA1073-5	76.88	0.16	13.33	1.27	0.04	0.34	1.81	3.54	2.46	0.19	100.00	7.24
UA1073-6	76.57	0.09	13.28	1.34	0.06	0.39	1.88	3.66	2.61	0.12	100.00	5.37
UA1073-7	76.26	0.07	13.43	1.24	0.09	0.30	1.78	3.69	2.91	0.23	100.00	5.21
UA1073-9	76.24	0.14	13.50	1.30	0.09	0.33	1.78	3.84	2.61	0.17	100.00	4.61
UA1073-10	76.81	0.18	13.42	1.28	0.07	0.32	1.86	3.40	2.52	0.15	100.00	6.78
UA1073-11	76.87	0.17	13.36	1.25	0.01	0.32	1.81	3.51	2.52	0.18	100.00	6.99
UA1073-12	76.39	0.17	13.58	1.36	0.09	0.37	1.82	3.12	2.93	0.16	100.00	8.75
UA1073-13	76.31	0.14	13.48	1.30	0.07	0.33	1.96	3.56	2.69	0.16	100.00	5.25
UA1073-14	76.39	0.14	13.37	1.36	0.12	0.34	1.90	3.68	2.54	0.16	100.00	5.66
UA1073-15	76.68	0.16	13.38	1.28	0.07	0.31	1.88	3.46	2.60	0.17	100.00	5.57
UA1073-16	76.20	0.17	13.54	1.28	0.06	0.34	1.85	3.81	2.61	0.15	100.00	3.71
UA1073-17	76.34	0.19	13.34	1.25	0.10	0.30	1.84	3.91	2.56	0.17	100.00	4.85
UA1073-18	76.86	0.15	13.38	1.26	0.13	0.33	1.96	3.35	2.40	0.17	100.00	7.05
UA1073-19	76.60	0.20	13.26	1.24	0.04	0.37	1.87	3.74	2.48	0.19	100.00	6.92
UA1073-20	76.32	0.10	13.59	1.31	0.10	0.33	1.77	3.66	2.69	0.13	100.00	4.62
UA1073-21	76.57	0.10	13.53	1.27	0.03	0.32	1.79	3.59	2.61	0.18	100.00	5.83
UA1073-22	76.63	0.10	13.41	1.32	0.07	0.29	1.75	3.55	2.76	0.14	100.00	5.43
UA1073-23	76.43	0.18	13.49	1.34	0.09	0.33	1.85	3.59	2.55	0.16	100.00	5.11
UA1073-24	76.60	0.21	13.27	1.32	0.09	0.31	1.81	3.51	2.75	0.14	100.00	6.92
UA1073-25	76.38	0.15	13.48	1.31	0.02	0.34	1.89	3.74	2.58	0.12	100.00	6.31
UA1074-2	76.74	0.11	13.43	1.22	0.11	0.35	1.82	3.43	2.63	0.17	100.00	5.10
UA1074-3	76.46	0.16	13.49	1.28	0.07	0.37	1.88	3.50	2.62	0.17	100.00	5.81
UA1074-4	76.50	0.14	13.21	1.27	0.14	0.36	1.76	3.66	2.76	0.19	100.00	4.80
UA1074-5	76.40	0.13	13.68	1.28	0.09	0.34	1.82	3.52	2.58	0.17	100.00	7.73
UA1074-6	76.54	0.19	13.43	1.30	0.04	0.30	1.89	3.63	2.50	0.17	100.00	6.32
UA1074-7	76.47	0.17	13.26	1.23	0.08	0.36	1.96	3.74	2.55	0.18	100.00	6.35
UA1074-8	76.50	0.20	13.48	1.22	0.07	0.33	1.89	3.56	2.58	0.19	100.00	5.48
UA1074-9	76.49	0.09	13.55	1.21	0.09	0.32	1.84	3.65	2.59	0.16	100.00	5.54
UA1074-11	76.62	0.15	13.47	1.26	0.12	0.32	1.82	3.43	2.63	0.18	100.00	5.56
UA1074-13	77.10	0.13	13.35	1.19	0.06	0.39	1.77	3.34	2.52	0.15	100.00	6.12
UA1074-14	76.67	0.13	13.42	1.22	0.05	0.29	1.87	3.70	2.47	0.17	100.00	6.75
UA1074-15	76.50	0.18	13.44	1.20	0.09	0.36	1.87	3.59	2.59	0.19	100.00	5.17

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UA1074-16	76.56	0.12	13.26	1.32	0.08	0.37	1.86	3.59	2.69	0.14	100.00	4.75	
UA1074-18	76.35	0.15	13.42	1.27	0.06	0.34	1.83	3.79	2.66	0.13	100.00	5.53	
UA1074-19	76.63	0.17	13.50	1.18	0.07	0.29	1.87	3.52	2.62	0.16	100.00	5.40	
UA1074-21	76.62	0.15	13.46	1.26	0.05	0.31	1.79	3.57	2.60	0.19	100.00	4.69	
UA1074-22	[illegible]40	0.11	13.44	1.22	0.10	0.34	1.90	3.67	2.68	0.15	100.00	4.23	
UA1074-24	76.35	0.14	13.61	1.20	0.10	0.31	1.85	3.66	2.64	0.16	100.00	5.17	
UA1074-25	76.61	0.18	13.28	1.22	0.06	0.29	1.93	3.64	2.64	0.15	100.00	4.99	
UA1074-1	76.62	0.12	13.49	1.10	0.06	0.37	1.81	3.58	2.68	0.18	100.00	6.06	Nov. 30 2006
UA1074-2	76.60	0.11	13.64	1.10	0.06	0.32	1.92	3.67	2.41	0.18	100.00	4.75	
UA1074-4	76.37	0.16	13.55	1.20	0.03	0.31	1.75	3.77	2.72	0.14	100.00	5.33	
UA1074-5	76.58	0.10	13.51	1.20	0.08	0.31	1.83	3.51	2.67	0.20	100.00	6.26	
UA1074-6	76.77	0.11	13.40	1.24	0.04	0.34	1.70	3.79	2.48	0.12	100.00	5.42	
UA1074-7	76.75	0.13	13.35	1.24	0.04	0.33	1.89	3.53	2.57	0.18	100.00	7.19	
UA1074-8	76.45	0.15	13.57	1.30	0.08	0.29	1.80	3.53	2.65	0.18	100.00	5.88	
UA1074-9	76.47	0.14	13.49	1.21	0.08	0.27	1.95	3.57	2.64	0.18	100.00	6.80	
UA1074-10	76.65	0.23	13.62	1.18	0.07	0.38	1.84	3.36	2.49	0.17	100.00	7.06	
UA1074-11	76.48	0.18	13.39	1.23	0.09	0.35	1.74	3.72	2.62	0.20	100.00	6.35	
UA1074-12	76.49	0.11	13.41	1.17	0.08	0.39	1.72	3.90	2.55	0.16	100.00	5.95	
UA1074-13	76.47	0.14	13.41	1.33	0.08	0.34	2.07	3.59	2.38	0.18	100.00	5.76	
UA1074-14	76.36	0.17	13.43	1.26	0.06	0.36	1.84	3.74	2.62	0.15	100.00	5.68	
UA1074-15	76.19	0.18	13.50	1.26	0.08	0.30	1.87	3.85	2.61	0.17	100.00	5.42	
UA1074-16	76.63	0.13	13.38	1.25	0.11	0.34	1.76	3.68	2.53	0.19	100.00	6.94	
UA1074-17	76.29	0.18	13.46	1.21	0.01	0.35	1.86	3.87	2.61	0.16	100.00	6.17	
UA1074-18	76.61	0.11	13.38	1.24	0.07	0.32	1.91	3.53	2.70	0.12	100.00	7.75	
UA1074-19	76.69	0.08	13.56	1.24	0.09	0.32	1.83	3.46	2.59	0.14	100.00	5.95	
UA1074-20	76.54	0.20	13.45	1.19	0.03	0.35	1.84	3.64	2.59	0.18	100.00	6.70	
UA1215-1	77.17	0.14	13.30	1.18	0.07	0.31	1.88	3.42	2.39	0.14	100.00	3.33	Sept. 27 2006
UA1215-2	76.70	0.18	13.08	1.21	0.07	0.32	1.98	3.76	2.51	0.19	100.00	5.32	
UA1215-3	76.77	0.12	13.24	1.34	0.12	0.36	1.95	3.41	2.56	0.14	100.00	6.69	
UA1215-4	76.81	0.21	13.38	1.35	0.10	0.31	1.88	3.33	2.49	0.15	100.00	5.00	
UA1215-5	76.43	0.22	13.41	1.22	0.07	0.33	2.01	3.72	2.43	0.17	100.00	3.17	
UA1215-6	76.95	0.13	13.02	1.19	0.06	0.35	1.75	3.76	2.57	0.21	100.00	5.39	
UA1215-7	76.61	0.20	13.22	1.18	0.08	0.32	1.99	3.87	2.41	0.12	100.00	6.76	
UA1215-8	76.41	0.18	13.19	1.34	0.06	0.41	2.02	3.66	2.57	0.16	100.00	5.16	

UA1215-9	76.48	0.18	13.15	1.35	0.09	0.40	2.04	3.66	2.50	0.15	100.00	5.66	
UA1215-10	76.88	0.23	13.09	1.32	0.03	0.36	1.94	3.59	2.41	0.16	100.00	5.58	
UA1215-11	76.66	0.17	13.27	1.28	0.03	0.31	1.88	3.76	2.52	0.13	100.00	5.01	
UA1215-13	76.56	0.18	13.09	1.36	0.09	0.29	1.99	3.68	2.54	0.22	100.00	6.23	
UA1215-16	76.37	0.26	13.23	1.40	0.06	0.41	1.86	3.73	2.49	0.20	100.00	6.28	
UA1215-17	76.52	0.26	13.09	1.31	0.09	0.31	1.93	3.68	2.65	0.14	100.00	5.07	
UA1215-18	75.33	0.28	13.72	1.52	0.11	0.42	2.04	3.89	2.48	0.21	100.00	5.83	
UA1215-19	76.28	0.19	13.35	1.29	0.14	0.36	2.01	3.69	2.55	0.15	100.00	3.84	
UA1215-20	76.99	0.13	13.21	1.31	0.11	0.36	1.97	3.31	2.49	0.11	100.00	5.11	
UA1215-21	76.15	0.14	13.68	1.41	0.06	0.33	1.99	3.66	2.43	0.16	100.00	6.48	
UA1215-22	76.80	0.19	13.01	1.38	0.06	0.30	1.90	3.58	2.64	0.14	100.00	5.62	
UA1215-23	76.69	0.16	13.22	1.27	0.03	0.37	1.97	3.54	2.58	0.17	100.00	5.80	
UA1215-24	76.60	0.21	13.20	1.33	0.09	0.36	1.97	3.48	2.55	0.21	100.00	5.38	
UA1215-25	76.54	0.20	13.45	1.36	0.07	0.34	1.90	3.62	2.39	0.14	100.00	5.29	
UA1215-26	77.45	0.15	12.94	1.34	0.11	0.37	1.87	3.19	2.47	0.12	100.00	6.57	
UA1215-27	75.88	0.18	13.22	1.39	0.00	0.39	2.02	4.10	2.69	0.14	100.00	7.65	
UA1215-28	76.55	0.17	13.15	1.51	0.06	0.33	2.05	3.50	2.49	0.20	100.00	5.41	
UA1215-29	76.63	0.12	13.12	1.29	0.03	0.30	1.88	3.85	2.63	0.16	100.00	6.29	
UA1215-30	76.47	0.16	13.63	1.22	0.07	0.39	1.92	3.36	2.62	0.16	100.00	5.09	
UA1220-2	76.67	0.13	13.22	1.24	0.10	0.40	1.90	3.65	2.54	0.16	100.00	5.06	Sept. 28 2006
UA1220-3	76.63	0.19	13.42	1.29	0.08	0.35	1.86	3.38	2.60	0.19	100.00	6.16	
UA1220-4	77.05	0.17	13.21	1.20	0.07	0.32	1.83	3.53	2.47	0.14	100.00	4.43	
UA1220-6	76.11	0.17	13.63	1.33	0.10	0.33	1.94	3.67	2.56	0.17	100.00	4.90	
UA1220-8	76.38	0.22	13.50	1.27	0.05	0.34	1.93	3.61	2.55	0.17	100.00	7.26	
UA1220-9	76.71	0.18	13.36	1.25	0.13	0.34	1.81	3.37	2.67	0.18	100.00	6.52	
UA1220-10	76.60	0.19	13.37	1.19	0.08	0.37	1.87	3.53	2.61	0.19	100.00	8.96	
UA1220-11	76.61	0.15	13.32	1.33	0.10	0.33	1.95	3.62	2.45	0.14	100.00	6.01	
UA1220-12	76.89	0.12	13.43	1.16	0.03	0.33	1.90	3.35	2.58	0.19	100.00	8.07	
UA1220-13	76.51	0.24	13.27	1.40	0.05	0.34	2.07	3.51	2.53	0.09	100.00	5.99	
UA1220-14	76.80	0.15	13.15	1.31	0.06	0.33	1.79	3.70	2.52	0.18	100.00	5.89	
UA1220-16	76.36	0.20	13.37	1.33	0.06	0.35	1.88	3.70	2.65	0.11	100.00	7.46	
UA1220-18	76.87	0.13	13.35	1.23	0.05	0.34	1.92	3.57	2.40	0.14	100.00	5.18	
UA1220-2	76.85	0.17	13.26	1.25	0.04	0.33	1.85	3.62	2.46	0.18	100.00	5.21	Oct. 30 2006
UA1220-5	76.45	0.23	13.31	1.36	0.10	0.39	1.89	3.65	2.51	0.12	100.00	5.72	

UA1220-6	76.50	0.25	13.41	1.33	0.02	0.38	1.90	3.66	2.42	0.14	100.00	4.16	
UA1220-7	76.49	0.15	13.59	1.31	0.06	0.32	1.85	3.57	2.51	0.14	100.00	4.57	
UA1220-8	76.61	0.19	13.29	1.18	0.06	0.33	1.94	3.84	2.39	0.16	100.00	4.78	
UA1220-9	76.23	0.23	13.39	1.42	0.10	0.43	2.00	3.61	2.43	0.16	100.00	5.36	
UA1220-10	76.33	0.12	13.45	1.36	0.11	0.41	1.91	3.69	2.46	0.16	100.00	5.23	
UA1220-11	76.61	0.16	13.43	1.26	0.08	0.32	1.88	3.54	2.57	0.15	100.00	5.11	
UA1220-12	76.17	0.17	13.39	1.42	0.12	0.39	1.93	3.85	2.43	0.14	100.00	4.93	
UA1220-14	76.49	0.15	13.42	1.35	0.09	0.35	1.94	3.66	2.39	0.16	100.00	5.23	
UA1220-15	76.59	0.16	13.38	1.27	0.01	0.35	1.89	3.61	2.63	0.10	100.00	4.51	
UA1220-1	76.41	0.19	13.35	1.20	0.08	0.37	1.95	3.78	2.53	0.14	100.00	4.84	Nov. 30 2006
UA1220-2	76.49	0.15	13.35	1.27	0.08	0.35	1.93	3.67	2.58	0.14	100.00	5.86	
UA1220-3	76.17	0.18	13.50	1.31	0.03	0.36	1.88	3.84	2.56	0.17	100.00	5.20	
UA1220-5	76.81	0.21	13.28	1.25	0.04	0.36	1.88	3.53	2.54	0.10	100.00	4.87	
UA1220-6	76.47	0.16	13.47	1.24	0.09	0.36	1.83	3.70	2.53	0.14	100.00	5.92	
UA1220-7	76.59	0.16	13.33	1.28	0.08	0.29	1.85	3.83	2.46	0.13	100.00	4.30	
UA1220-8	76.39	0.11	13.40	1.28	0.06	0.36	2.02	3.65	2.53	0.20	100.00	6.50	
UA1220-9	76.71	0.12	13.28	1.22	0.11	0.36	1.91	3.65	2.45	0.20	100.00	5.46	
UA1220-11	76.58	0.11	13.50	1.08	0.05	0.30	1.73	3.81	2.66	0.17	100.00	5.62	
UA1220-12	76.20	0.27	13.39	1.32	0.05	0.34	1.90	3.85	2.52	0.16	100.00	4.75	
UA1220-13	75.71	0.21	13.78	1.36	0.08	0.41	1.93	3.82	2.52	0.18	100.00	5.80	
UA1220-14	76.64	0.12	13.37	1.37	0.06	0.30	1.82	3.62	2.54	0.17	100.00	5.46	
UA1220-15	76.17	0.17	13.31	1.31	0.10	0.39	1.94	3.78	2.63	0.19	100.00	5.97	
UA1220-16	76.56	0.19	13.15	1.27	0.09	0.33	2.00	3.73	2.54	0.14	100.00	5.25	
UA1220-17	76.84	0.19	13.08	1.29	0.07	0.34	1.82	3.56	2.63	0.18	100.00	6.37	
UA1220-18	76.80	0.21	13.18	1.30	0.04	0.29	1.92	3.52	2.61	0.14	100.00	5.56	
UA1220-19	76.46	0.22	13.32	1.27	0.12	0.39	1.76	3.74	2.59	0.13	100.00	5.86	
UA1220-20	76.43	0.17	13.45	1.34	0.05	0.36	1.94	3.62	2.49	0.14	100.00	5.90	
UA1225-1	76.49	0.20	13.23	1.30	0.10	0.34	1.92	3.60	2.62	0.20	100.00	6.19	Sept. 28 2006
UA1225-7	76.84	0.20	13.08	1.18	0.08	0.36	1.78	3.74	2.60	0.14	100.00	5.73	
UA1225-8	76.05	0.18	13.54	1.26	0.06	0.34	1.89	3.86	2.64	0.18	100.00	7.88	
UA1225-9	76.48	0.19	13.53	1.24	0.06	0.31	1.90	3.62	2.52	0.15	100.00	5.93	
UA1225-10	76.39	0.20	13.69	1.16	0.11	0.32	1.96	3.48	2.54	0.17	100.00	5.79	
UA1225-14	76.50	0.15	13.39	1.33	0.09	0.36	1.96	3.58	2.49	0.16	100.00	5.69	
UA1225-15	76.39	0.18	13.33	1.26	0.08	0.31	1.95	3.68	2.64	0.18	100.00	4.37	

	UA1225-16	76.35	0.11	13.59	1.29	0.13	0.38	2.05	3.44	2.49	0.17	100.00	5.46	
	UA1225-17	76.77	0.12	13.20	1.27	0.09	0.36	1.92	3.64	2.46	0.18	100.00	5.81	
	UA1225-19	76.46	0.14	13.43	1.24	0.14	0.33	1.89	3.65	2.58	0.13	100.00	5.95	
	AVERAGE	76.56	0.16	13.37	1.27	0.07	0.34	1.88	3.63	2.57	0.16	100.00	5.82	
	STDEV	0.30	0.04	0.18	0.07	0.03	0.03	0.10	0.15	0.09	0.03	0.00	0.96	n=164
BP	**UA1226-1**	76.85	0.16	13.49	1.22	0.03	0.33	1.92	3.28	2.55	0.19	100.00	7.13	Sept. 28 2006
	UA1226-2	76.62	0.16	13.45	1.14	0.02	0.36	1.84	3.42	2.83	0.16	100.00	6.91	
	UA1226-3	76.76	0.18	13.56	1.14	0.04	0.30	1.83	3.36	2.67	0.16	100.00	5.45	
	UA1226-4	76.38	0.20	13.74	1.14	0.02	0.35	1.81	3.49	2.70	0.17	100.00	5.67	
	UA1226-5	77.02	0.10	13.47	1.14	0.05	0.30	1.81	3.41	2.58	0.13	100.00	5.75	
	UA1226-6	76.51	0.11	13.52	1.18	0.06	0.26	1.84	3.71	2.66	0.14	100.00	7.46	
	UA1226-8	77.14	0.06	13.47	1.15	0.06	0.30	1.93	3.31	2.43	0.15	100.00	7.49	
	UA1226-9	76.92	0.15	13.35	1.13	0.07	0.37	1.83	3.36	2.64	0.18	100.00	5.78	
	UA1226-10	76.61	0.10	13.55	1.16	0.04	0.33	1.93	3.50	2.63	0.15	100.00	5.66	
	UA1226-12	76.12	0.19	13.42	1.27	0.06	0.41	1.93	3.74	2.71	0.15	100.00	7.22	
	UA1226-13	76.32	0.09	13.46	1.27	0.08	0.39	1.94	3.52	2.77	0.16	100.00	7.00	
	UA1226-14	76.44	0.14	13.65	1.23	0.08	0.36	1.83	3.50	2.62	0.16	100.00	4.81	
	UA1226-15	76.72	0.14	13.35	1.22	0.07	0.37	1.88	3.55	2.54	0.16	100.00	5.37	
	UA1226-17	76.88	0.22	13.43	1.16	0.06	0.33	1.81	3.36	2.57	0.18	100.00	9.68	
	UA1226-1	76.48	0.09	13.50	1.11	0.05	0.34	1.94	3.76	2.55	0.18	100.00	5.60	Nov. 30 2006
	UA1226-2	76.36	0.20	13.45	1.15	0.07	0.32	1.80	3.82	2.67	0.15	100.00	5.48	
	UA1226-4	76.52	0.12	13.46	1.12	0.10	0.35	1.80	3.72	2.63	0.18	100.00	6.20	
	UA1226-5	76.96	0.20	13.12	1.20	0.10	0.38	1.85	3.49	2.52	0.18	100.00	7.49	
	UA1226-6	76.35	0.15	13.58	1.14	0.06	0.30	1.90	3.69	2.71	0.12	100.00	5.35	
	UA1226-8	76.31	0.21	13.58	1.13	0.08	0.30	1.82	3.63	2.75	0.18	100.00	5.18	
	UA1226-9	76.69	0.12	13.57	1.16	0.06	0.33	1.79	3.59	2.54	0.13	100.00	5.58	
	UA1226-10	76.26	0.19	13.46	1.23	0.08	0.34	1.86	3.77	2.63	0.17	100.00	5.49	
	UA1226-11	76.36	0.09	13.67	1.22	0.10	0.36	1.82	3.58	2.61	0.19	100.00	5.87	
	UA1226-12	76.37	0.12	13.63	1.11	0.07	0.32	1.77	3.76	2.71	0.13	100.00	6.11	
	UA1226-13	76.11	0.12	13.58	1.13	0.08	0.36	1.91	3.91	2.63	0.16	100.00	6.02	
	UA1226-14	75.78	0.12	13.85	1.21	0.14	0.37	1.88	3.83	2.65	0.16	100.00	9.61	
	UA1226-15	76.39	0.11	13.61	1.11	0.12	0.31	1.76	3.72	2.68	0.19	100.00	6.82	
	UA1226-16	76.45	0.11	13.48	1.10	0.07	0.30	1.84	3.68	2.76	0.21	100.00	6.69	

	UA1226-17	76.72	0.14	13.49	1.23	0.06	0.31	1.85	3.47	2.56	0.17	100.00	7.09	
	UA1226-18	76.53	0.14	13.54	1.03	0.10	0.32	1.90	3.76	2.54	0.12	100.00	6.05	
	UA1226-19	76.24	0.18	13.51	1.20	0.06	0.37	1.90	3.81	2.58	0.15	100.00	5.25	
	UA1226-20	76.89	0.12	13.36	1.09	0.03	0.34	1.74	3.68	2.59	0.15	100.00	5.65	
	UA1227-2	76.55	0.12	13.54	1.20	0.05	0.29	1.87	3.63	2.61	0.13	100.00	4.49	Sept. 28 2006
	UA1227-5	76.59	0.17	13.50	1.13	0.03	0.31	1.85	3.67	2.63	0.12	100.00	5.54	
	UA1227-6	77.06	0.12	13.36	1.14	0.03	0.32	1.84	3.29	2.65	0.18	100.00	4.78	
	UA1227-7	76.59	0.21	13.37	1.36	0.06	0.34	2.04	3.48	2.42	0.13	100.00	4.54	
	UA1227-8	76.57	0.11	13.56	1.11	0.10	0.31	1.78	3.70	2.59	0.17	100.00	3.41	
	UA1227-9	76.38	0.12	13.59	1.15	0.11	0.35	1.85	3.75	2.54	0.16	100.00	5.12	
	UA1227-13	76.80	0.17	13.43	1.19	0.08	0.39	1.88	3.40	2.50	0.17	100.00	5.52	
	UA1227-14	76.36	0.16	13.35	1.20	0.09	0.32	1.83	3.87	2.69	0.12	100.00	5.17	
	UA1227-15	76.53	0.18	13.43	1.21	0.03	0.30	1.85	3.72	2.57	0.18	100.00	4.65	
	UA1227-16	76.69	0.13	13.59	1.15	0.03	0.31	1.84	3.43	2.65	0.16	100.00	4.99	
	UA1227-17	76.72	0.16	13.37	1.15	0.08	0.35	1.88	3.56	2.57	0.16	100.00	5.91	
	AVERAGE	76.56	0.14	13.50	1.17	0.07	0.33	1.86	3.60	2.62	0.16	100.00	5.98	
	STDEV	0.28	0.04	0.12	0.06	0.03	0.03	0.06	0.17	0.09	0.02	0.00	1.22	n=43
PrH	**UA1217-1**	75.26	0.10	14.91	0.89	0.12	0.29	1.43	4.11	2.86	0.03	100.00	6.17	Sept. 28 2006
	UA1217-2	75.25	0.06	14.83	0.90	0.11	0.28	1.36	4.45	2.76	0.00	100.00	7.08	
	UA1217-3	75.34	0.12	14.93	0.85	0.04	0.28	1.38	4.31	2.73	0.03	100.00	5.18	
	UA1217-4	75.34	0.12	14.83	0.85	0.06	0.25	1.42	4.42	2.71	0.00	100.00	4.74	
	UA1217-5	75.32	0.12	14.96	0.87	0.10	0.24	1.32	4.47	2.57	0.03	100.00	4.52	
	UA1217-6	75.46	0.12	14.72	0.76	0.07	0.26	1.37	4.26	2.95	0.03	100.00	7.62	
	UA1217-7	75.31	0.10	14.71	0.91	0.06	0.30	1.37	4.43	2.75	0.05	100.00	4.50	
	UA1217-8	75.51	0.12	14.61	0.93	0.11	0.29	1.34	4.32	2.75	0.02	100.00	7.05	
	UA1217-10	75.43	0.09	14.70	0.90	0.13	0.27	1.31	4.53	2.60	0.05	100.00	4.54	
	UA1217-11	74.86	0.07	14.75	1.00	0.08	0.31	1.42	4.51	2.93	0.07	100.00	7.88	
	UA1217-12	75.61	0.06	14.96	0.86	0.10	0.19	1.35	4.07	2.78	0.02	100.00	5.58	
	UA1217-13	75.46	0.04	14.77	0.84	0.08	0.28	1.40	4.26	2.82	0.06	100.00	5.78	
	UA1217-14	75.56	0.08	14.68	0.83	0.12	0.26	1.36	4.35	2.72	0.04	100.00	6.65	
	UA1217-15	75.56	0.09	14.78	0.87	0.13	0.28	1.35	4.19	2.72	0.03	100.00	5.58	
	UA1217-16	75.45	0.13	14.78	0.86	0.07	0.25	1.47	4.19	2.79	0.03	100.00	6.15	
	UA1217-17	75.25	0.07	14.83	0.92	0.11	0.24	1.39	4.30	2.83	0.05	100.00	4.96	

UA1217-18	75.60	0.16	14.66	0.80	0.10	0.29	1.36	4.20	2.82	0.02	100.00	4.61	
UA1217-2	75.40	0.15	14.99	0.91	0.07	0.23	1.28	4.13	2.78	0.06	100.00	5.13	Oct. 30 2006
UA1217-3	75.03	0.11	14.88	0.89	0.10	0.29	1.40	4.55	2.73	0.02	100.00	5.67	
UA1217-4	75.25	0.11	15.08	0.87	0.09	0.30	1.42	4.23	2.62	0.04	100.00	5.55	
UA1217-5	75.05	0.03	15.31	0.85	0.13	0.23	1.48	4.07	2.74	0.10	100.00	6.33	
UA1217-6	75.42	0.08	14.99	0.88	0.05	0.29	1.25	4.10	2.93	0.01	100.00	6.17	
UA1217-7	74.64	0.10	14.80	0.92	0.03	0.34	1.61	4.76	2.68	0.14	100.00	6.48	
UA1217-9	75.22	0.10	14.91	1.02	0.08	0.27	1.37	4.33	2.66	0.04	100.00	3.82	
UA1217-10	75.20	0.10	14.85	0.97	0.09	0.25	1.42	4.36	2.72	0.03	100.00	6.02	
UA1217-11	75.19	0.15	15.03	0.93	0.11	0.28	1.33	4.22	2.76	0.00	100.00	6.59	
UA1217-14	75.20	0.11	14.93	0.91	0.15	0.26	1.39	4.29	2.74	0.01	100.00	5.03	
UA1217-16	75.28	0.13	15.06	0.95	0.04	0.28	1.38	4.21	2.66	0.02	100.00	5.76	
UA1217-17	75.37	0.12	15.01	0.80	0.11	0.30	1.35	4.14	2.79	0.01	100.00	5.37	
UA1217-1	74.88	0.11	15.05	0.89	0.06	0.36	1.34	4.52	2.77	0.02	100.00	7.47	Nov. 30 2006
UA1217-3	75.23	0.15	14.91	0.84	0.08	0.28	1.35	4.43	2.68	0.04	100.00	7.01	
UA1217-4	75.11	0.14	14.57	0.81	0.08	0.28	1.37	4.83	2.76	0.05	100.00	5.35	
UA1217-5	75.19	0.08	14.82	0.87	0.08	0.30	1.32	4.58	2.77	0.00	100.00	5.62	
UA1217-6	75.28	0.10	14.86	0.85	0.09	0.31	1.38	4.29	2.82	0.04	100.00	6.26	
UA1217-7	75.79	0.07	14.68	0.76	0.01	0.24	1.32	4.22	2.86	0.05	100.00	6.68	
UA1217-8	75.34	0.10	14.75	0.97	0.07	0.25	1.42	4.36	2.67	0.07	100.00	6.42	
UA1217-10	75.33	0.06	14.97	0.94	0.09	0.27	1.34	4.39	2.63	0.00	100.00	5.06	
UA1217-11	75.47	0.13	14.77	0.89	0.04	0.28	1.27	4.36	2.73	0.04	100.00	5.53	
UA1217-12	75.27	0.10	14.73	0.88	0.07	0.24	1.39	4.55	2.75	0.03	100.00	7.01	
UA1217-13	75.35	0.06	14.72	0.76	0.11	0.24	1.42	4.86	2.45	0.03	100.00	5.63	
UA1217-14	75.21	0.16	14.82	0.93	0.08	0.25	1.34	4.40	2.80	0.01	100.00	6.31	
UA1217-15	75.48	0.10	14.67	0.92	0.04	0.23	1.42	4.39	2.75	0.00	100.00	5.84	
UA1217-16	75.26	0.08	15.16	0.82	0.09	0.29	1.32	4.26	2.70	0.02	100.00	6.12	
UA1217-17	75.39	0.13	14.86	0.74	0.09	0.26	1.30	4.44	2.73	0.05	100.00	6.38	
UA1217-18	75.37	0.08	14.91	0.96	0.11	0.22	1.39	4.15	2.78	0.03	100.00	6.19	
UA1217-19	75.43	0.14	14.71	0.94	0.07	0.25	1.33	4.23	2.87	0.03	100.00	7.10	
UA1217-20	75.46	0.10	14.81	0.88	0.04	0.29	1.36	4.36	2.69	0.01	100.00	6.66	
AVERAGE	75.31	0.10	14.85	0.88	0.08	0.27	1.37	4.35	2.75	0.03	100.00	5.94	
STDEV	0.20	0.03	0.15	0.06	0.03	0.03	0.06	0.18	0.09	0.03	0.00	0.90	n=47

MC	**UA1218-1**	74.82	0.21	15.07	0.98	0.05	0.29	1.46	4.28	2.78	0.05	100.00	7.71	Sept. 28 2006
	UA1218-3	75.18	0.11	14.98	0.80	0.05	0.28	1.59	4.43	2.55	0.03	100.00	5.30	
	UA1218-4	74.90	0.16	14.93	0.92	0.07	0.30	1.54	4.43	2.68	0.07	100.00	5.16	
	UA1218-5	74.90	0.10	14.88	0.87	0.05	0.26	1.48	4.53	2.85	0.09	100.00	8.59	
	UA1218-6	75.27	0.08	14.92	0.88	0.06	0.23	1.53	4.20	2.78	0.04	100.00	6.27	
	UA1218-7	75.13	0.14	14.94	0.85	0.06	0.28	1.42	4.29	2.83	0.07	100.00	6.35	
	UA1218-8	75.14	0.08	15.09	0.88	0.09	0.23	1.47	4.24	2.72	0.06	100.00	5.25	
	UA1218-10	74.91	0.06	15.13	0.97	0.00	0.26	1.43	4.42	2.76	0.05	100.00	5.35	
	UA1218-12	75.30	0.08	14.81	0.87	0.07	0.26	1.59	4.44	2.57	0.02	100.00	4.88	
	UA1218-14	75.07	0.08	15.18	0.85	0.07	0.28	1.41	4.20	2.81	0.04	100.00	6.32	
	UA1218-15	74.90	0.14	15.04	0.85	0.07	0.29	1.39	4.49	2.79	0.04	100.00	6.28	
	UA1218-16	75.05	0.08	14.99	0.93	0.07	0.27	1.52	4.31	2.72	0.05	100.00	5.43	
	UA1218-17	75.21	0.13	15.01	0.95	0.14	0.22	1.42	3.96	2.91	0.05	100.00	8.77	
	UA1218-18	74.96	0.09	15.21	0.91	0.06	0.21	1.48	4.28	2.73	0.08	100.00	5.93	
	UA1218-1	75.16	0.07	15.07	0.92	0.11	0.29	1.46	4.16	2.73	0.03	100.00	4.36	Oct. 30 2006
	UA1218-2	74.91	0.20	15.21	0.91	0.13	0.31	1.44	4.23	2.65	0.01	100.00	7.13	
	UA1218-3	75.11	0.07	15.35	0.83	0.08	0.26	1.51	4.19	2.54	0.06	100.00	6.37	
	UA1218-4	75.31	0.11	15.29	0.86	0.07	0.27	1.45	4.08	2.53	0.03	100.00	5.89	
	UA1218-5	75.16	0.16	14.91	0.89	0.04	0.27	1.48	4.41	2.63	0.03	100.00	5.79	
	UA1218-6	74.82	0.07	15.26	0.92	0.07	0.27	1.44	4.46	2.68	0.03	100.00	4.52	
	UA1218-7	75.15	0.13	14.83	0.94	0.09	0.28	1.55	4.40	2.62	0.00	100.00	5.26	
	UA1218-8	75.15	0.14	14.96	0.88	0.10	0.29	1.42	4.32	2.69	0.06	100.00	6.07	
	UA1218-9	74.64	0.13	15.31	0.93	0.13	0.27	1.48	4.39	2.65	0.07	100.00	4.83	
	UA1218-10	74.82	0.06	15.39	0.88	0.10	0.32	1.46	4.36	2.57	0.04	100.00	4.95	
	UA1218-11	74.88	0.15	15.16	0.92	0.08	0.22	1.46	4.30	2.78	0.05	100.00	5.05	
	UA1218-12	74.98	0.21	15.29	0.90	0.09	0.22	1.45	4.24	2.57	0.05	100.00	5.14	
	AVERAGE	75.03	0.12	15.09	0.90	0.08	0.27	1.47	4.31	2.70	0.05	100.00	5.88	
	STDEV	0.17	0.05	0.17	0.04	0.03	0.03	0.05	0.13	0.11	0.02	0.00	1.13	n=26
PrH/MC	**UT1887-1**	75.56	0.17	14.61	0.84	0.04	0.27	1.25	4.49	2.73	0.04	100.00	5.97	Mar. 27 2006
mixed	**UT1887-2**	75.05	0.09	15.05	0.91	0.11	0.25	1.49	4.38	2.64	0.03	100.00	5.79	
	UT1887-3	75.33	0.08	14.76	0.94	0.06	0.26	1.46	4.41	2.68	0.02	100.00	6.47	
	UT1887-4	75.20	0.09	14.86	0.89	0.09	0.27	1.43	4.41	2.72	0.04	100.00	5.55	
	UT1887-5	75.59	0.12	14.66	0.96	0.10	0.28	1.27	4.40	2.58	0.04	100.00	6.07	

UT1887-6	75.59	0.09	14.67	0.88	0.03	0.24	1.40	4.36	2.73	0.01	100.00	5.59	
UT1887-7	75.17	0.17	14.96	0.84	0.12	0.27	1.40	4.29	2.76	0.02	100.00	6.02	
UT1887-8	75.59	0.09	14.64	0.89	0.06	0.26	1.35	4.33	2.76	0.02	100.00	6.32	
UT1887-9	75.21	0.08	14.86	0.93	0.12	0.25	1.43	4.33	2.74	0.06	100.00	6.78	
UT1887-10	75.40	0.13	14.73	0.89	0.09	0.26	1.45	4.37	2.66	0.02	100.00	6.21	
UT1887-11	75.32	0.09	14.76	0.89	0.08	0.28	1.38	4.38	2.79	0.04	100.00	5.56	
UT1887-12	75.35	0.01	14.94	0.86	0.12	0.24	1.38	4.36	2.71	0.03	100.00	5.45	
UT1887-13	74.69	0.18	15.18	0.92	0.08	0.24	1.51	4.47	2.70	0.03	100.00	5.86	
UT1887-14	75.50	0.11	14.67	0.85	0.06	0.29	1.30	4.47	2.70	0.04	100.00	5.77	
UT1887-15	75.48	0.10	14.69	0.85	0.01	0.31	1.32	4.54	2.67	0.03	100.00	5.25	
UT1887-16	74.79	0.03	15.10	1.02	0.04	0.26	1.43	4.48	2.83	0.03	100.00	5.79	
UT1887-18	75.84	0.13	14.61	0.85	0.07	0.25	1.27	4.23	2.72	0.02	100.00	5.78	
ut1887-1	75.02	0.03	15.23	0.93	0.06	0[illegible]	1.34	4.33	2.75	0.02	100.00	5.62	Aug. 1 2004
ut1887-2	75.08	0.10	14.94	0.87	0.10	0[illegible]	1.37	4.55	2.67	0.07	100.00	6.16	
ut1887-3	74.76	0.03	15.68	0.91	0.00	0.27	1.32	4.28	2.74	0.01	100.00	6.40	
ut1887-4	75.36	0.00	15.03	0.82	0.06	0.22	1.32	4.47	2.72	0.00	100.00	7.15	
ut1887-5	74.67	0.01	15.38	0.93	0.05	0.28	1.41	4.47	2.74	0.07	100.00	8.13	
ut1887-8	75.32	0.05	14.85	0.94	0.07	0.27	1.28	4.41	2.75	0.07	100.00	7.14	
ut1887-9	74.80	0.22	15.24	0.86	0.07	0.27	1.41	4.42	2.68	0.02	100.00	7.34	
ut1887-10	75.09	0.08	14.95	1.01	0.02	0.32	1.29	4.50	2.67	0.06	100.00	6.69	
ut1887-12	75.01	0.14	14.97	0.96	0.07	0.34	1.30	4.54	2.67	0.00	100.00	6.50	
ut1887-14	75.13	0.06	15.01	0.95	0.06	0.23	1.32	4.45	2.75	0.04	100.00	7.10	
ut1887-15	74.98	0.04	15.01	0.99	0.07	0.26	1.39	4.51	2.72	0.03	100.00	6.81	
ut1887-16	75.27	0.05	15.08	0.99	0.07	0.19	1.31	4.26	2.79	0.00	100.00	6.64	
ut1887-17	75.41	0.05	14.76	0.92	0.05	0.30	1.28	4.47	2.72	0.03	100.00	6.51	
ut1887-18	75.42	0.11	15.05	0.99	0.07	0.30	1.33	4.03	2.69	0.00	100.00	6.49	
ut1887-1	74.77	0.05	15.25	0.89	0.05	0.33	1.39	4.53	2.73	0.00	100.00	5.99	Mar. 15 2005
ut1887-2	74.97	0.05	15.14	0.99	0.08	0.25	1.42	4.35	2.70	0.05	100.00	5.97	
ut1887-3	75.12	0.14	14.93	0.93	0.08	0.25	1.34	4.47	2.69	0.06	100.00	6.20	
ut1887-4	74.49	0.23	15.15	0.88	0.05	0.30	1.35	4.68	2.81	0.06	100.00	7.01	
ut1887-5	75.92	0.10	14.32	0.91	0.12	0.29	1.36	4.23	2.72	0.02	100.00	7.05	
ut1887-7	74.58	0.12	15.44	0.84	0.12	0.24	1.45	4.35	2.78	0.09	100.00	7.29	
ut1887-8	75.06	0.20	14.61	0.89	0.05	0.26	1.40	4.60	2.86	0.06	100.00	9.70	
ut1887-9	74.98	0.00	15.00	0.86	0.15	0.27	1.33	4.48	2.86	0.07	100.00	6.30	

ut1887-10	75.05	0.00	14.82	0.76	0.08	0.26	1.34	4.70	2.98	0.01	100.00	4.40
ut1887-11	75.26	0.08	14.77	0.90	0.08	0.28	1.38	4.35	2.90	0.00	100.00	8.50
ut1887-12	74.98	0.09	14.77	0.94	0.05	0.25	1.42	4.61	2.84	0.05	100.00	7.66
ut1887-13	75.28	0.11	14.75	0.91	0.08	0.28	1.26	4.19	3.09	0.06	100.00	7.00
ut1887-14	75.84	0.11	14.40	0.93	0.09	0.27	1.24	4.35	2.75	0.02	100.00	7.15
ut1887-16	75.44	0.05	14.72	1.00	0.14	0.24	1.40	4.15	2.87	0.00	100.00	6.93
ut1887-17	74.74	0.13	15.25	0.93	0.01	0.24	1.35	4.53	2.81	0.01	100.00	5.93
ut1887-19	74.84	0.05	14.94	0.94	0.06	0.27	1.46	4.70	2.71	0.03	100.00	5.67
ut1887-20	75.16	0.22	14.92	0.91	0.02	0.25	1.36	4.25	2.84	0.08	100.00	7.01
ut1887-21	74.88	0.17	15.01	0.93	0.02	0.25	1.33	4.52	2.81	0.08	100.00	6.89
ut1887-22	75.16	0.17	14.85	0.77	0.13	0.28	1.39	4.53	2.72	0.00	100.00	7.88
UT1887-1	75.31	0.15	14.82	0.80	0.11	0.29	1.38	4.40	2.73	0.03	100.00	5.37
UT1887-2	74.91	0.06	15.23	0.85	0.07	0.22	1.49	4.51	2.62	0.04	100.00	6.66
UT1887-3	75.15	0.09	15.01	0.86	0.05	0.24	1.46	4.36	2.73	0.05	100.00	7.28
UT1887-6	75.25	0.03	14.97	0.92	0.06	0.28	1.50	4.24	2.68	0.06	100.00	6.68
UT1887-7	75.47	0.05	14.78	0.80	0.09	0.21	1.37	4.44	2.75	0.05	100.00	4.99
UT1887-8	75.62	0.12	14.76	0.96	0.07	0.28	1.37	4.19	2.61	0.02	100.00	5.75
UT1887-9	75.47	0.17	14.76	0.91	0.04	0.28	1.35	4.21	2.78	0.04	100.00	7.27
UT1887-11	75.46	0.15	14.99	0.87	0.08	0.22	1.42	4.09	2.67	0.05	100.00	4.96
UT1887-12	75.33	0.10	14.92	0.80	0.09	0.23	1.52	4.27	2.70	0.04	100.00	4.74
UT1887-13	75.27	0.09	14.88	0.99	0.07	0.26	1.32	4.36	2.74	0.03	100.00	6.34
UT1887-14	74.93	0.16	14.91	0.98	0.09	0.25	1.41	4.50	2.74	0.02	100.00	5.82
UT1887-16	75.58	0.12	14.89	0.88	0.05	0.25	1.38	4.07	2.72	0.06	100.00	6.60
UT1887-17	75.57	0.12	14.81	0.85	0.09	0.24	1.35	4.24	2.69	0.03	100.00	5.67
UT1887-18	74.91	0.09	15.32	0.95	0.09	0.25	1.36	4.38	2.66	0.00	100.00	7.92
UT1887-19	75.58	0.16	14.63	0.90	0.05	0.30	1.34	4.29	2.72	0.02	100.00	5.89
UT 1893-1	75.13	0.04	14.86	1.00	0.05	0.28	1.33	4.21	3.02	0.06	100.00	8.20
UT 1893-2	75.22	0.12	14.57	0.95	0.11	0.31	1.28	4.58	2.84	0.03	100.00	3.92
UT 1893-3	74.96	0.03	14.76	0.96	0.12	0.28	1.35	4.50	2.98	0.06	100.00	5.91
UT 1893-4	75.55	0.00	14.75	0.84	0.06	0.22	1.19	4.47	2.89	0.01	100.00	4.19
UT 1893-5	75.36	0.17	14.57	0.85	0.10	0.27	1.19	4.71	2.71	0.06	100.00	3.67
UT 1893-6	75.07	0.20	14.77	0.90	0.02	0.26	[illegible]	4.68	2.79	0.03	100.00	4.11
UT 1893-7	74.99	0.23	14.82	0.72	0.00	0.27	1.48	4.72	2.76	0.00	100.00	3.45
UT 1893-8	75.12	0.28	14.88	0.85	0.10	0.25	1.30	4.43	2.77	0.04	100.00	4.66

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UT 1893-9	75.25	0.12	14.57	0.90	0.11	0.24	1.27	4.77	2.74	0.03	100.00	4.42	
UT 1893-11	75.30	0.07	14.63	0.84	0.08	0.26	1.24	4.73	2.86	0.00	100.00	4.67	
UT 1893-12	75.44	0.08	14.69	0.83	0.10	0.26	1.34	4.60	2.66	0.00	100.00	3.50	
UT 1893-13	75.23	0.12	14.92	0.89	0.05	0.28	1.33	4.32	2.81	0.05	100.00	3.87	
UT 1893-15	75.20	0.12	14.63	0.93	0.05	0.25	1.35	4.57	2.81	0.09	100.00	7.13	
UT 1893-16	75.62	0.05	14.70	0.85	0.03	0.22	1.29	4.51	2.68	0.05	100.00	6.94	
UT 1893-18	75.53	0.15	14.72	0.79	0.06	0.26	1.23	4.48	2.75	0.03	100.00	4.87	
ut1893-1	75.46	0.09	14.58	0.79	0.02	0.31	1.41	4.55	2.72	0.06	100.00	8.81	Mar. 15 2005
ut1893-2	75.05	0.11	14.78	0.86	0.06	0.26	1.39	4.66	2.75	0.08	100.00	8.19	
ut1893-3	75.63	0.21	14.60	0.87	0.07	0.26	1.37	4.13	2.77	0.09	100.00	6.98	
ut1893-4	75.19	0.18	14.74	0.88	0.10	0.33	1.29	4.43	2.81	0.05	100.00	8.47	
ut1893-5	74.91	0.04	14.71	1.01	0.09	0.28	1.34	4.81	2.80	0.02	100.00	7.89	
ut1893-6	74.69	0.07	15.00	0.95	0.11	0.30	1.41	4.63	2.82	0.02	100.00	7.80	
ut1893-7	75.71	0.12	14.50	0.85	0.09	0.21	1.35	4.42	2.75	0.00	100.00	6.49	
ut1893-8	75.49	0.00	14.71	0.94	0.09	0.23	1.28	4.56	2.69	0.00	100.00	5.14	
ut1893-9	75.08	0.03	14.98	0.91	0.09	0.29	1.36	4.43	2.80	0.03	100.00	7.76	
ut1893-10	75.46	0.15	14.64	0.85	0.03	0.24	1.35	4.45	2.79	0.04	100.00	6.63	
ut1893-11	75.67	0.18	14.18	0.81	0.06	0.30	1.35	4.57	2.81	0.07	100.00	6.75	
ut1893-12	75.58	0.09	14.58	0.91	0.09	0.29	1.32	4.42	2.65	0.06	100.00	5.98	
ut1893-14	75.59	0.08	14.76	0.86	0.08	0.29	1.32	4.22	2.80	0.00	100.00	6.95	
ut1893-15	75.45	0.10	14.73	0.80	0.12	0.25	1.33	4.47	2.72	0.03	100.00	5.81	
ut1893-16	75.81	0.12	14.44	0.88	0.06	0.27	1.35	4.36	2.72	0.00	100.00	7.18	
ut1893-17	75.23	0.12	14.62	1.00	0.09	0.30	1.36	4.51	2.76	0.00	100.00	7.34	
ut1893-19	75.16	0.14	14.89	0.86	0.08	0.25	1.39	4.35	2.79	0.08	100.00	7.22	
ut1893-21	75.00	0.14	14.74	0.88	0.10	0.28	1.41	4.57	2.83	0.05	100.00	7.00	
ut1893-22	75.06	0.15	14.83	0.96	0.06	0.35	1.32	4.47	2.77	0.04	100.00	8.10	
ut1893-23	75.15	0.02	14.75	0.85	0.07	0.28	1.48	4.48	2.86	0.04	100.00	7.68	
ut1893-25	75.56	0.16	14.64	0.87	0.07	0.33	1.24	4.32	2.80	0.00	100.00	6.93	
UA1085-1	75.21	0.09	14.73	0.90	0.04	0.24	1.41	4.53	2.81	0.04	100.00	6.08	Mar. 28 2006
UA1085-3	75.37	0.10	14.76	0.91	0.05	0.27	1.32	4.46	2.72	0.04	100.00	7.49	
UA1085-4	75.22	0.14	14.73	0.87	0.05	0.28	1.37	4.55	2.77	0.02	100.00	6.02	
UA1085-5	75.42	0.12	14.51	0.91	0.06	0.26	1.38	4.61	2.69	0.03	100.00	5.89	
UA1085-6	75.20	0.12	14.67	0.88	0.06	0.30	1.34	4.64	2.73	0.05	100.00	6.61	
UA1085-7	75.37	0.09	14.76	0.88	0.11	0.28	1.40	4.58	2.48	0.04	100.00	6.19	

UA1085-15	75.37	0.08	14.76	0.89	0.07	0.22	1.49	4.38	2.72	0.04	100.00	5.56	
UA1085-16	75.45	0.12	14.60	0.88	0.08	0.25	1.41	4.47	2.73	0.01	100.00	6.05	
UA1085-18	75.41	0.12	14.61	0.88	0.09	0.28	1.44	4.55	2.60	0.03	100.00	4.73	
UA1085-20	75.29	0.13	14.56	0.95	0.08	0.25	1.50	4.50	2.70	0.03	100.00	6.09	
UA1085-21	75.23	0.12	14.71	0.95	0.07	0.30	1.36	4.55	2.64	0.06	100.00	6.46	
UA1085-22	75.26	0.15	14.60	0.87	0.11	0.27	1.48	4.46	2.78	0.02	100.00	6.13	
UA1085-23	75.19	0.15	14.62	0.84	0.11	0.31	1.46	4.57	2.70	0.03	100.00	6.21	
UA1085-24	75.46	0.11	14.89	0.84	0.09	0.27	1.34	4.27	2.67	0.06	100.00	6.05	
UA1085-25	75.24	0.13	14.79	0.86	0.12	0.28	1.31	4.63	2.61	0.02	100.00	5.85	
UA1085-1	75.69	0.12	14.65	0.86	0.02	0.30	1.41	4.25	2.67	0.03	100.00	5.99	Nov. 30 2006
UA1085-2	75.27	0.12	14.65	0.92	0.11	0.28	1.43	4.49	2.69	0.04	100.00	6.94	
UA1085-3	75.60	0.12	14.42	0.86	0.05	0.27	1.35	4.60	2.71	0.02	100.00	6.74	
UA1085-4	75.40	0.13	14.88	0.87	0.07	0.27	1.36	4.36	2.63	0.02	100.00	7.54	
UA1085-5	75.19	0.14	14.85	0.81	0.08	0.31	1.46	4.41	2.70	0.05	100.00	6.45	
UA1085-6	75.32	0.07	14.68	0.93	0.04	0.25	1.41	4.54	2.70	0.06	100.00	6.63	
UA1085-7	75.11	0.10	14.95	0.93	0.07	0.31	1.38	4.35	2.80	0.01	100.00	5.47	
UA1085-8	75.22	0.14	14.79	0.91	0.05	0.26	1.44	4.43	2.74	0.03	100.00	6.68	
UA1085-9	75.27	0.09	14.67	0.94	0.08	0.29	1.40	4.45	2.78	0.04	100.00	6.19	
UA1085-11	75.15	0.04	14.92	0.83	0.02	0.28	1.47	4.50	2.75	0.03	100.00	6.59	
UA1085-12	75.32	0.14	14.80	0.84	0.10	0.27	1.38	4.35	2.76	0.03	100.00	5.64	
UA1085-13	75.42	0.08	14.45	0.88	0.08	0.21	1.36	4.82	2.65	0.04	100.00	9.26	
UA[illegible]85-14	75.39	0.11	14.91	0.91	0.03	0.28	1.45	4.20	2.71	0.02	100.00	5.46	
UA1085-16	75.34	0.11	14.84	0.77	0.05	0.27	1.32	4.49	2.77	0.03	100.00	6.67	
UA1085-17	75.55	0.12	14.78	0.97	0.06	0.28	1.41	4.06	2.73	0.05	100.00	7.03	
UA1085-18	75.40	0.14	14.77	0.95	0.05	0.27	1.42	4.22	2.78	0.01	100.00	6.09	
UA1087-1	75.20	0.17	14.72	0.96	0.07	0.28	1.29	4.33	2.92	0.06	100.00	5.68	Mar. 28 2006
UA1087-2	75.77	0.13	14.52	0.93	0.04	0.32	1.27	4.24	2.78	0.02	100.00	5.76	
UA1087-3	75.27	0.12	14.90	0.87	0.06	0.29	1.31	4.36	2.78	0.04	100.00	5.78	
UA1087-4	75.27	0.16	14.80	0.96	0.08	0.30	1.30	4.36	2.75	0.03	100.00	5.84	
UA1087-5	75.18	0.13	14.78	0.92	0.06	0.33	1.33	4.43	2.81	0.03	100.00	5.84	
UA1087-6	75.44	0.08	14.80	0.91	0.08	0.29	1.37	4.18	2.84	0.01	100.00	7.35	
UA1087-7	75.41	0.12	14.72	0.87	0.09	0.30	1.37	4.37	2.69	0.05	100.00	5.82	
UA1087-8	75.49	0.11	14.90	0.92	0.05	0.28	1.32	4.29	2.62	0.02	100.00	6.68	
UA1087-9	75.36	0.09	14.83	0.92	0.08	0.26	1.45	4.16	2.82	0.03	100.00	7.98	

UA1087-11	75.45	0.14	14.63	0.86	0.07	0.25	1.30	4.53	2.73	0.04	100.00	5.81
UA1087-12	75.55	0.11	14.69	0.89	0.03	0.27	1.29	4.40	2.74	0.02	100.00	5.50
UA1087-13	74.99	0.12	14.75	0.88	0.06	0.26	1.45	4.86	2.57	0.05	100.00	5.04
UA1087-15	75.30	0.10	14.65	0.91	0.12	0.24	1.46	4.44	2.73	0.05	100.00	5.77
UA1087-16	75.39	0.07	14.83	0.91	0.04	0.25	1.31	4.47	2.68	0.05	100.00	5.40
UA1087-17	75.49	0.12	14.62	0.97	0.04	0.25	1.37	4.36	2.74	0.04	100.00	5.94
UA1087-18	75.15	0.15	15.00	0.88	0.06	0.27	1.34	4.44	2.65	0.07	100.00	8.75
UA1087-19	75.45	0.12	14.67	0.85	0.06	0.31	1.33	4.49	2.68	0.03	100.00	5.37
UA1087-21	75.43	0.09	14.73	0.88	0.14	0.26	1.38	4.27	2.76	0.06	100.00	5.87
UA1087-22	75.48	0.07	14.57	0.90	0.11	0.28	1.36	4.42	2.81	0.00	100.00	4.54
UA1087-23	75.40	0.14	14.65	0.90	0.03	0.28	1.35	4.50	2.74	0.02	100.00	5.58
UA1087-24	75.35	0.09	14.80	0.98	0.12	0.25	1.33	4.28	2.75	0.04	100.00	5.04
UA1087-25	75.75	0.11	14.52	0.88	0.07	0.23	1.38	4.30	2.74	0.02	100.00	5.35
UA1088-2	75.32	0.11	14.69	0.91	0.11	0.30	1.33	4.49	2.68	0.06	100.00	6.55
UA1088-3	75.01	0.12	14.75	0.94	0.03	0.28	1.43	4.66	2.77	0.01	100.00	5.65
UA1088-4	75.01	0.10	14.81	0.94	0.07	0.26	1.45	4.66	2.66	0.03	100.00	5.94
UA1088-7	74.79	0.11	14.99	0.96	0.13	0.26	1.57	4.51	2.65	0.02	100.00	6.32
UA1088-8	75.29	0.09	14.89	0.87	0.05	0.31	1.44	4.21	2.80	0.05	100.00	6.46
UA1088-9	75.50	0.14	14.63	0.92	0.09	0.31	1.32	4.32	2.73	0.03	100.00	7.63
UA1088-10	75.12	0.14	14.75	0.95	0.10	0.25	1.35	4.49	2.82	0.01	100.00	6.86
UA1088-11	75.29	0.10	14.77	0.91	0.12	0.27	1.36	4.47	2.67	0.05	100.00	4.60
UA1088-12	75.39	0.16	14.68	0.92	0.11	0.28	1.41	4.27	2.75	0.03	100.00	5.39
UA1088-13	75.46	0.15	14.67	0.92	0.05	0.22	1.40	4.45	2.63	0.04	100.00	5.19
UA1088-14	75.68	0.10	14.65	0.93	0.08	0.28	1.39	4.28	2.60	0.03	100.00	5.60
UA1088-15	75.57	0.09	14.80	0.90	0.05	0.26	1.43	4.18	2.70	0.02	100.00	6.18
UA1088-16	75.45	0.07	14.63	0.87	0.03	0.28	1.26	4.62	2.75	0.04	100.00	4.70
UA1088-17	75.10	0.06	14.93	0.95	0.09	0.25	1.49	4.46	2.63	0.04	100.00	6.01
UA1088-18	75.20	0.15	14.94	0.93	0.07	0.26	1.37	4.45	2.59	0.04	100.00	5.78
UA1088-19	75.52	0.11	14.86	0.87	0.07	0.28	1.38	4.18	2.67	0.05	100.00	6.48
UA1088-20	75.54	0.03	14.64	0.92	0.07	0.26	1.39	4.28	2.87	0.01	100.00	7.31
UA1088-21	75.49	0.09	14.64	0.87	0.07	0.25	1.35	4.47	2.76	0.02	100.00	6.06
UA1088-23	75.32	0.09	14.84	0.90	0.05	0.28	1.29	4.44	2.72	0.07	100.00	5.89
UA1088-24	75.61	0.12	14.70	0.91	0.06	0.24	1.37	4.29	2.67	0.04	100.00	5.47
UA1088-25	75.21	0.09	14.91	0.95	0.06	0.23	1.29	4.40	2.83	0.02	100.00	6.26

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UA1089-1	75.47	0.11	14.87	0.95	0.13	0.25	1.36	4.04	2.77	0.04	100.00	6.19	Mar. 27 2006
UA1089-2	75.48	0.17	14.66	0.95	0.05	0.24	1.40	4.24	2.78	0.01	100.00	6.12	
UA1089-3	75.57	0.13	14.79	0.95	0.01	0.29	1.40	4.18	2.64	0.04	100.00	6.37	
UA1089-4	75.68	0.04	14.72	0.96	0.07	0.27	1.33	4.23	2.69	0.01	100.00	6.73	
UA1089-5	75.51	0.07	14.82	0.94	0.07	0.25	1.42	4.10	2.77	0.03	100.00	7.56	
UA1089-6	75.25	0.03	14.80	0.97	0.11	0.24	1.52	4.31	2.74	0.03	100.00	6.11	
UA1089-7	75.29	0.13	14.88	0.86	0.06	0.24	1.38	4.43	2.69	0.03	100.00	5.88	
UA1089-8	75.01	0.14	14.89	0.89	0.09	0.29	1.42	4.39	2.85	0.04	100.00	6.33	
UA1089-9	75.46	0.10	14.72	0.96	0.08	0.27	1.37	4.23	2.75	0.06	100.00	6.33	
UA1089-10	74.90	0.14	15.06	0.88	0.08	0.30	1.43	4.33	2.81	0.07	100.00	7.13	
UA1089-11	75.43	0.10	14.83	0.86	0.08	0.22	1.29	4.43	2.77	0.01	100.00	5.87	
UA1089-12	75.23	0.11	14.76	0.91	0.04	0.24	1.37	4.43	2.88	0.04	100.00	5.89	
UA1089-13	75.21	0.10	14.88	0.96	0.08	0.26	1.41	4.37	2.69	0.03	100.00	7.20	
UA1089-15	75.33	0.13	14.96	0.95	0.08	0.26	1.32	4.26	2.72	0.00	100.00	6.39	
UA1089-16	75.27	0.09	14.71	0.93	0.07	0.26	1.43	4.49	2.75	0.00	100.00	6.22	
UA1089-17	75.53	0.07	14.65	0.87	0.08	0.30	1.44	4.33	2.72	0.02	100.00	6.59	
UA1089-18	75.21	0.13	14.68	0.99	0.04	0.27	1.38	4.51	2.78	0.02	100.00	6.45	
UA1089-19	75.34	0.15	14.63	1.01	0.08	0.24	1.33	4.35	2.82	0.05	100.00	6.69	
UA1089-20	75.22	0.15	14.61	0.92	0.09	0.22	1.38	4.62	2.74	0.05	100.00	6.06	
UA1089-21	75.34	0.12	14.64	0.87	0.10	0.26	1.35	4.49	2.80	0.03	100.00	6.35	
UA1089-22	75.69	0.09	14.43	0.98	0.10	0.29	1.36	4.44	2.55	0.06	100.00	8.75	
UA1089-23	75.44	0.11	14.76	0.86	0.06	0.23	1.37	4.40	2.75	0.03	100.00	5.30	
UA1089-24	75.38	0.12	14.81	0.90	0.05	0.26	1.36	4.26	2.82	0.03	100.00	5.58	
UA1089-25	75.44	0.09	14.73	0.93	0.03	0.23	1.32	4.39	2.79	0.06	100.00	5.46	
UA1090-1	75.64	0.10	14.69	0.90	0.08	0.31	1.36	4.23	2.63	0.07	100.00	5.51	Mar. 27 2006
UA1090-2	75.66	0.13	14.65	0.90	0.06	0.27	1.43	4.21	2.66	0.02	100.00	7.18	
UA1090-4	75.59	0.16	14.75	0.96	0.05	0.25	1.41	4.11	2.71	0.02	100.00	6.06	
UA1090-5	75.24	0.05	14.75	0.88	0.10	0.26	1.40	4.59	2.69	0.03	100.00	5.33	
UA1090-8	75.08	0.15	14.64	0.93	0.10	0.20	1.42	4.43	3.01	0.04	100.00	6.33	
UA1090-9	75.32	0.15	14.53	0.90	0.13	0.26	1.43	4.52	2.72	0.03	100.00	6.71	
UA1090-10	75.37	0.14	14.68	0.95	0.03	0.27	1.31	4.51	2.71	0.03	100.00	4.90	
UA1090-11	75.19	0.14	14.68	0.92	0.04	0.28	1.39	4.63	2.71	0.02	100.00	5.74	
UA1090-12	75.33	0.09	14.59	0.91	0.05	0.29	1.40	4.49	2.82	0.03	100.00	6.58	
UA1090-13	75.16	0.15	14.62	0.91	0.06	0.28	1.40	4.60	2.78	0.03	100.00	6.48	

UA1090-14	75.19	0.07	14.65	0.91	0.11	0.29	1.35	4.56	2.83	0.05	100.00	6.35	
UA1090-15	75.20	0.14	14.58	0.91	0.11	0.28	1.40	4.58	2.78	0.02	100.00	5.81	
UA1090-16	75.44	0.16	14.70	0.88	0.07	0.24	1.32	4.31	2.86	0.03	100.00	5.32	
UA1090-17	75.49	0.15	14.62	0.84	0.05	0.29	1.40	4.47	2.69	0.00	100.00	5.72	
UA1090-18	75.19	0.09	14.65	0.94	0.06	0.25	1.36	4.63	2.81	0.02	100.00	5.27	
UA1090-20	75.30	0.10	14.71	0.93	0.10	0.27	1.44	4.33	2.81	0.01	100.00	6.29	
UA1090-21	75.24	0.14	14.85	0.92	0.09	0.29	1.41	4.35	2.69	0.01	100.00	6.33	
UA1090-22	75.18	0.05	14.97	0.95	0.03	0.27	1.42	4.38	2.73	0.02	100.00	6.00	
UA1090-23	75.17	0.12	14.82	0.90	0.04	0.31	1.33	4.50	2.81	0.01	100.00	6.16	
UA1090-24	75.33	0.11	14.78	0.90	0.07	0.26	1.36	4.42	2.75	0.02	100.00	5.12	
UA1090-25	75.23	0.10	14.80	0.95	0.05	0.32	1.35	4.41	2.75	0.03	100.00	5.88	
UA1091-2	75.55	0.15	14.81	0.93	0.05	0.24	1.37	4.26	2.61	0.02	100.00	5.34	Mar. 27 2006
UA1091-3	75.78	0.08	14.65	0.91	0.0[illegible]	0.29	1.31	4.28	2.64	0.03	100.00	5.65	
UA1091-4	75.49	0.08	14.73	0.94	0.11	0.27	1.37	4.34	2.64	0.04	100.00	5.89	
UA1091-5	75.42	0.09	14.74	0.91	0.09	0.25	1.37	4.42	2.71	0.00	100.00	6.22	
UA1091-6	75.07	0.11	14.79	0.89	0.09	0.27	1.42	4.59	2.77	0.02	100.00	7.66	
UA1091-7	75.10	0.11	14.62	0.93	0.08	0.29	1.40	4.57	2.83	0.05	100.00	5.08	
UA1091-8	75.81	0.07	14.59	0.89	0.03	0.28	1.36	4.27	2.70	0.01	100.00	7.45	
UA1091-9	75.37	0.16	14.74	0.85	0.06	0.26	1.35	4.39	2.78	0.03	100.00	5.20	
UA1091-10	75.42	0.08	14.85	0.93	0.00	0.27	1.35	4.39	2.68	0.03	100.00	6.05	
UA1091-11	75.30	0.10	14.72	0.91	0.10	0.27	1.35	4.44	2.79	0.03	100.00	6.94	
UA1091-12	75.04	0.13	14.83	0.90	0.07	0.25	1.40	4.62	2.72	0.06	100.00	5.59	
UA1091-13	75.54	0.13	14.56	0.95	0.07	0.27	1.38	4.31	2.77	0.01	100.00	6.96	
UA1091-14	75.52	0.07	14.58	0.94	0.08	0.29	1.32	4.32	2.86	0.02	100.00	6.09	
UA1091-15	75.09	0.11	15.12	0.89	0.03	0.26	1.28	4.45	2.75	0.02	100.00	5.33	
UA1091-16	75.26	0.10	14.78	1.00	0.08	0.28	1.44	4.32	2.71	0.03	100.00	8.16	
UA1091-17	75.71	0.08	14.65	0.87	0.06	0.24	1.41	4.37	2.62	0.00	100.00	6.20	
UA1091-18	75.84	0.07	14.52	0.90	0.06	0.24	1.32	4.23	2.79	0.02	100.00	7.01	
UA1091-19	75.36	0.19	14.72	0.86	0.07	0.23	1.34	4.48	2.74	0.01	100.00	5.50	
UA1091-20	75.32	0.15	14.69	0.88	0.10	0.26	1.42	4.45	2.70	0.03	100.00	5.62	
UA1091-22	75.49	0.10	14.70	0.95	0.10	0.22	1.39	4.34	2.69	0.01	100.00	5.91	
UA1091-23	75.43	0.06	14.57	0.94	0.05	0.28	1.37	4.49	2.81	0.01	100.00	5.40	
UA1091-24	75.10	0.10	14.80	0.93	0.12	0.28	1.37	4.47	2.80	0.02	100.00	4.94	
UA1091-25	75.26	0.09	14.78	0.95	0.10	0.28	1.42	4.49	2.60	0.04	100.00	7.18	

UA1216-1	75.07	0.09	14.83	0.92	0.10	0.30	1.37	4.54	2.76	0.02	100.00	4.92	Sept. 27 2006
UA1216-2	75.64	0.15	14.64	1.02	0.09	0.30	1.42	3.83	2.91	0.01	100.00	5.85	
UA1216-3	75.42	0.09	14.80	1.00	0.11	0.22	1.43	4.13	2.77	0.04	100.00	6.26	
UA1216-6	75.27	0.09	14.89	1.03	0.09	0.26	1.52	4.11	2.72	0.02	100.00	7.20	
UA1216-7	75.11	0.16	14.99	0.86	0.06	0.25	1.48	4.48	2.59	0.01	100.00	5.69	
UA1216-9	75.59	0.18	14.59	0.88	0.09	0.21	1.35	4.43	2.67	0.01	100.00	4.03	
UA1216-10	75.83	0.12	14.70	0.88	0.00	0.23	1.39	4.25	2.60	0.00	100.00	5.23	
UA1216-11	75.77	0.06	14.50	0.84	0.07	0.26	1.29	4.43	2.77	0.00	100.00	3.76	
UA1216-12	74.90	0.10	14.85	0.98	0.06	0.21	1.51	4.61	2.72	0.06	100.00	4.58	
UA1216-13	75.20	0.10	14.78	1.02	0.03	0.30	1.52	4.26	2.76	0.03	100.00	5.66	
UA1216-14	74.81	0.12	15.09	0.86	0.10	0.28	1.59	4.27	2.81	0.07	100.00	4.88	
UA1216-17	75.31	0.14	14.73	0.96	0.09	0.27	1.46	4.56	2.62	0.06	100.00	4.84	
UA1216-18	75.51	0.11	14.94	0.98	0.06	0.27	1.41	4.05	2.63	0.05	100.00	4.77	
UA1216-19	74.72	0.17	15.04	0.89	0.03	0.29	1.46	4.56	2.84	0.01	100.00	4.37	
UA1216-20	75.05	0.07	15.17	0.89	0.04	0.24	1.47	4.44	2.58	0.06	100.00	5.37	
UA1216-21	75.37	0.15	14.67	0.90	0.05	0.27	1.48	4.39	2.69	0.03	100.00	5.36	
UA1216-22	74.80	0.16	15.08	0.97	0.02	0.32	1.60	4.33	2.72	0.01	100.00	6.48	
UA1216-23	75.54	0.06	14.72	0.93	0.10	0.25	1.41	4.17	2.82	0.01	100.00	8.61	
UA1216-25	74.83	0.12	15.16	0.95	0.04	0.28	1.54	4.42	2.61	0.05	100.00	4.41	
UA1216-26	74.96	0.09	14.92	0.92	0.07	0.24	1.59	4.46	2.73	0.02	100.00	5.16	
UA1216-29	75.58	0.08	14.96	0.92	0.09	0.26	1.35	4.06	2.71	0.00	100.00	6.64	
UA1221-2	74.96	0.16	15.07	0.76	0.13	0.26	1.38	4.55	2.72	0.02	100.00	4.89	Sept. 28 2006
UA1221-3	75.69	0.11	14.93	0.95	0.06	0.23	1.36	3.90	2.73	0.04	100.00	5.48	
UA1221-4	75.66	0.07	14.94	0.91	0.06	0.28	1.36	4.06	2.65	0.01	100.00	5.43	
UA1221-5	75.37	0.11	14.84	0.94	0.07	0.25	1.42	4.23	2.70	0.05	100.00	5.37	
UA1221-6	75.45	0.08	14.79	0.83	0.02	0.29	1.40	4.36	2.77	0.01	100.00	5.93	
UA1221-7	75.25	0.09	14.82	0.89	0.12	0.26	1.36	4.45	2.74	0.03	100.00	5.37	
UA1221-8	75.23	0.13	15.01	0.87	0.09	0.29	1.40	4.15	2.80	0.03	100.00	8.60	
UA1221-9	75.18	0.09	14.79	0.87	0.15	0.29	1.35	4.36	2.87	0.06	100.00	9.64	
UA1221-10	75.11	0.11	14.80	0.86	0.09	0.31	1.36	4.63	2.71	0.03	100.00	9.00	
UA1221-11	75.48	0.08	14.85	0.92	0.08	0.27	1.31	4.03	2.94	0.02	100.00	6.00	
UA1221-12	75.18	0.14	14.75	0.91	0.12	0.32	1.46	4.46	2.65	0.01	100.00	5.21	
UA1221-13	75.30	0.11	14.72	0.88	0.02	0.30	1.41	4.39	2.80	0.06	100.00	6.79	
UA1221-14	75.41	0.11	14.74	0.90	0.08	0.25	1.37	4.21	2.91	0.01	100.00	4.93	

UA1221-15	75.12	0.10	14.83	0.91	0.06	0.27	1.35	4.52	2.80	0.03	100.00	4.92	
UA1221-16	75.52	0.12	14.71	0.93	0.03	0.22	1.36	4.37	2.67	0.06	100.00	5.22	
UA1221-17	75.35	0.09	15.05	0.88	0.09	0.29	1.35	4.10	2.75	0.04	100.00	6.24	
UA1222-1	75.47	0.12	14.63	0.91	0.03	0.30	1.50	4.22	2.79	0.02	100.00	6.79	Sept. 28 2006
UA1222-2	75.52	0.11	14.64	0.86	0.09	0.25	1.37	4.33	2.78	0.07	100.00	3.42	
UA1222-3	75.03	0.07	14.77	0.92	0.03	0.30	1.36	4.69	2.79	0.02	100.00	4.85	
UA1222-4	75.27	0.10	14.67	1.02	0.09	0.29	1.46	4.18	2.90	0.02	100.00	6.67	
UA1222-5	74.95	0.14	14.87	0.90	0.08	0.35	1.41	4.44	2.83	0.03	100.00	7.48	
UA1222-8	75.42	0.08	14.83	0.82	0.09	0.26	1.45	4.24	2.76	0.04	100.00	6.64	
UA1222-9	75.11	0.12	14.63	0.86	0.12	0.30	1.40	4.71	2.70	0.05	100.00	5.24	
UA1222-10	75.18	0.10	15.03	0.91	0.09	0.28	1.36	4.32	2.70	0.03	100.00	7.01	
UA1222-11	75.50	0.16	14.72	0.89	0.10	0.24	1.49	4.15	2.69	0.06	100.00	5.71	
UA1222-12	75.20	0.15	14.61	0.88	0.12	0.26	1.40	4.48	2.87	0.04	100.00	6.37	
UA1222-13	75.65	0.09	14.68	0.90	0.05	0.20	1.42	4.33	2.66	0.02	100.00	6.12	
UA1222-14	75.15	0.12	14.74	0.86	0.12	0.29	1.37	4.42	2.89	0.04	100.00	6.38	
UA1222-16	75.23	0.11	14.91	0.84	0.08	0.22	1.34	4.47	2.73	0.06	100.00	5.72	
UA1222-18	75.48	0.14	14.85	0.88	0.01	0.24	1.35	4.29	2.74	0.02	100.00	6.30	
UA1228-1	75.65	0.14	14.82	0.81	0.01	0.24	1.36	4.16	2.77	0.03	100.00	5.39	Sept. 28 2006
UA1228-2	75.55	0.08	14.67	0.93	0.08	0.26	1.46	4.09	2.83	0.05	100.00	6.34	
UA1228-3	75.44	0.10	14.86	0.86	0.09	0.32	1.34	4.21	2.73	0.04	100.00	5.83	
UA1228-4	75.63	0.07	14.85	0.95	0.07	0.28	1.31	4.07	2.75	0.03	100.00	5.77	
UA1228-5	75.52	0.09	14.79	0.90	0.09	0.25	1.33	4.25	2.76	0.01	100.00	5.04	
UA1228-6	75.25	0.12	14.83	0.93	0.00	0.31	1.36	4.37	2.79	0.03	100.00	4.60	
UA1228-7	75.63	0.04	14.64	0.87	0.03	0.25	1.41	4.43	2.66	0.04	100.00	6.11	
UA1228-8	75.26	0.12	14.69	0.93	0.13	0.26	1.39	4.59	2.62	0.02	100.00	3.97	
UA1228-9	75.33	0.11	14.82	0.87	0.16	0.25	1.41	4.37	2.65	0.03	100.00	4.23	
UA1228-10	75.77	0.13	14.66	0.92	0.06	0.27	1.33	4.07	2.75	0.02	100.00	4.82	
UA1228-11	75.43	0.17	14.61	0.77	0.07	0.24	1.39	4.44	2.88	0.00	100.00	6.06	
UA1228-12	75.48	0.08	15.04	0.85	0.02	0.26	1.30	4.23	2.73	0.02	100.00	5.60	
UA1228-13	75.06	0.13	14.71	0.90	0.09	0.31	1.41	4.53	2.82	0.04	100.00	4.94	
UA1228-14	75.33	0.05	14.79	0.94	0.07	0.28	1.34	4.38	2.80	0.02	100.00	5.69	
UA1228-15	75.69	0.13	14.77	0.79	0.08	0.25	1.27	4.37	2.59	0.05	100.00	5.13	
UA1228-16	75.48	0.09	14.87	0.84	0.08	0.26	1.40	4.19	2.75	0.03	100.00	6.57	
UA1228-17	75.25	0.12	14.90	0.84	0.04	0.31	1.32	4.51	2.70	0.00	100.00	6.02	

UA1228-18	75.71	0.17	14.97	0.85	0.11	0.26	1.36	3.81	2.72	0.04	100.00	5.87	
UA1228-19	75.48	0.12	15.04	0.82	0.03	0.23	1.33	4.23	2.71	0.02	100.00	5.64	
UA1229-1	75.43	0.11	14.76	0.88	0.07	0.28	1.34	4.40	2.69	0.05	100.00	3.79	Sept. 28 2006
UA1229-2	75.38	0.06	14.81	0.85	0.08	0.24	1.39	4.38	2.73	0.06	100.00	5.75	
UA1229-3	75.57	0.08	14.84	0.94	0.05	0.25	1.30	4.34	2.62	0.02	100.00	5.71	
UA1229-4	75.21	0.14	15.02	0.92	0.11	0.33	1.42	4.26	2.56	0.05	100.00	5.96	
UA1229-6	75.21	0.16	14.99	0.84	0.11	0.26	1.38	4.31	2.74	0.01	100.00	4.48	
UA1229-7	75.43	0.11	14.68	0.88	0.11	0.25	1.37	4.46	2.71	0.00	100.00	5.40	
UA1229-8	75.71	0.07	14.79	0.87	0.08	0.28	1.32	4.23	2.62	0.03	100.00	6.68	
UA1229-9	75.44	0.09	14.87	0.93	0.07	0.26	1.27	4.24	2.82	0.01	100.00	5.97	
UA1229-10	75.38	0.12	14.62	0.95	0.04	0.28	1.34	4.40	2.83	0.05	100.00	4.10	
UA1229-11	75.51	0.16	14.78	0.88	0.04	0.29	1.38	4.24	2.71	0.01	100.00	5.41	
UA1229-12	75.64	0.12	14.64	0.93	0.07	0.26	1.36	4.24	2.70	0.05	100.00	5.83	
UA1229-13	75.46	0.09	14.76	0.89	0.06	0.29	1.36	4.31	2.77	0.01	100.00	5.84	
UA1229-14	75.47	0.12	14.78	0.87	0.08	0.24	1.37	4.29	2.77	0.00	100.00	6.07	
UA1229-15	75.51	0.14	14.80	0.82	0.07	0.28	1.33	4.33	2.68	0.05	100.00	4.73	
UA1229-16	75.70	0.12	14.62	0.93	0.07	0.23	1.28	4.26	2.78	0.02	100.00	4.76	
UA1229-17	75.47	0.08	14.82	0.90	0.07	0.29	1.37	4.26	2.70	0.03	100.00	4.34	
UA1230-1	75.34	0.08	14.74	0.85	0.06	0.26	1.31	4.54	2.81	0.00	100.00	4.19	Sept. 28 2006
UA1230-2	75.08	0.18	14.79	0.84	0.07	0.31	1.39	4.51	2.77	0.04	100.00	9.05	
UA1230-3	75.28	0.18	14.95	0.92	0.07	0.24	1.38	4.24	2.73	0.00	100.00	5.11	
UA1230-4	75.27	0.12	14.72	0.89	0.05	0.25	1.35	4.44	2.88	0.03	100.00	4.72	
UA1230-5	75.42	0.15	14.75	0.85	0.12	0.27	1.41	4.29	2.72	0.02	100.00	4.92	
UA1230-6	75.35	0.11	14.89	0.81	0.09	0.19	1.44	4.29	2.80	0.03	100.00	5.52	
UA1230-7	75.33	0.10	14.90	0.80	0.04	0.29	1.36	4.43	2.67	0.07	100.00	5.18	
UA1230-8	75.32	0.11	14.68	0.92	0.07	0.29	1.37	4.48	2.73	0.04	100.00	6.90	
UA1230-9	75.68	0.08	14.99	0.80	0.12	0.27	1.33	4.01	2.66	0.05	100.00	5.83	
UA1230-10	75.29	0.17	14.68	0.82	0.05	0.28	1.36	4.39	2.90	0.06	100.00	5.50	
UA1230-11	75.32	0.11	14.79	0.88	0.06	0.25	1.45	4.42	2.68	0.05	100.00	4.14	
UA1230-12	75.59	0.07	14.65	0.87	0.07	0.24	1.37	4.37	2.74	0.04	100.00	4.82	
UA1230-13	75.31	0.14	14.79	0.91	0.06	0.25	1.39	4.36	2.78	0.02	100.00	6.79	
UA1230-14	74.97	0.11	14.95	0.96	0.07	0.31	1.35	4.45	2.81	0.01	100.00	6.34	
UA1230-15	75.65	0.13	14.88	0.78	0.06	0.26	1.31	4.13	2.72	0.06	100.00	6.00	
UA1230-16	75.77	0.06	14.66	0.97	0.06	0.28	1.30	4.24	2.63	0.02	100.00	5.04	

UA1230-17	75.64	0.11	14.99	0.73	0.07	0.26	1.32	4.02	2.83	0.02	100.00	6.53	
UA1231-1	75.43	0.15	14.72	0.85	0.11	0.23	1.34	4.38	2.75	0.04	100.00	5.34	Sept. 28 2006
UA1231-2	75.63	0.09	14.75	0.84	0.08	0.26	1.38	4.19	2.74	0.03	100.00	5.48	
UA1231-3	75.40	0.10	14.82	0.91	0.06	0.28	1.35	4.28	2.75	0.04	100.00	4.61	
UA1231-4	75.62	0.06	14.83	0.86	0.06	0.25	1.33	4.25	2.69	0.06	100.00	5.01	
UA1231-5	75.61	0.09	14.71	0.93	0.08	0.25	1.36	4.13	2.80	0.03	100.00	4.91	
UA1231-6	75.37	0.12	14.78	0.82	0.07	0.33	1.38	4.36	2.73	0.03	100.00	5.45	
UA1231-7	74.74	0.07	14.83	0.99	0.07	0.29	1.46	4.67	2.83	0.06	100.00	8.51	
UA1231-9	75.36	0.13	14.85	0.89	0.09	0.25	1.34	4.27	2.80	0.01	100.00	5.83	
UA1231-10	75.41	0.08	14.94	0.91	0.04	0.27	1.49	4.30	2.51	0.06	100.00	5.51	
UA1231-11	75.87	0.09	14.78	0.86	0.08	0.23	1.28	4.15	2.61	0.05	100.00	4.92	
UA1231-12	75.59	0.08	14.60	0.86	0.06	0.24	1.44	4.45	2.65	0.02	100.00	5.28	
UA1231-13	75.57	0.07	14.76	0.93	0.09	0.25	1.35	4.26	2.70	0.02	100.00	4.92	
UA1231-15	75.75	0.11	14.70	0.87	0.06	0.26	1.33	4.23	2.68	0.01	100.00	5.06	
UA1231-16	75.56	0.12	14.81	0.89	0.07	0.27	1.32	4.28	2.64	0.05	100.00	4.95	
UA1231-17	75.53	0.12	14.69	0.94	0.12	0.25	1.35	4.19	2.79	0.01	100.00	5.46	
UA1223-2	75.40	0.10	14.95	0.90	0.02	0.28	1.39	4.16	2.75	0.05	100.00	5.19	Sept. 28 2006
UA1223-3	75.41	0.08	14.98	0.82	0.07	0.31	1.33	4.34	2.66	0.01	100.00	6.15	
UA1223-4	75.63	0.18	14.97	0.60	0.07	0.29	1.28	4.23	2.71	0.04	100.00	5.56	
UA1223-5	75.42	0.11	14.77	0.75	0.06	0.29	1.21	4.77	2.58	0.04	100.00	10.96	
UA1223-6	75.60	0.12	14.65	0.84	0.07	0.25	1.42	4.35	2.70	0.01	100.00	5.55	
UA1223-7	75.03	0.12	14.68	0.89	0.09	0.28	1.38	4.64	2.83	0.07	100.00	5.40	
UA1223-8	75.21	0.03	14.75	0.85	0.05	0.31	1.35	4.62	2.82	0.01	100.00	4.30	
UA1223-9	75.40	0.15	14.81	0.91	0.04	0.28	1.42	4.29	2.67	0.02	100.00	5.39	
UA1223-10	75.40	0.08	14.84	0.91	0.08	0.25	1.41	4.36	2.63	0.02	100.00	5.70	
UA1223-11	75.46	0.14	14.89	0.82	0.08	0.24	1.38	4.17	2.79	0.04	100.00	5.95	
UA1223-12	75.25	0.12	14.73	0.84	0.09	0.29	1.39	4.51	2.73	0.05	100.00	5.55	
UA1223-13	75.49	0.08	14.85	0.86	0.11	0.23	1.31	4.18	2.83	0.05	100.00	5.48	
UA1223-14	75.16	0.10	14.91	0.92	0.06	0.26	1.37	4.54	2.67	0.02	100.00	5.79	
UA1223-15	75.15	0.17	14.97	0.82	0.11	0.27	1.35	4.36	2.74	0.07	100.00	5.16	
UA1223-16	75.60	0.10	14.60	0.84	0.06	0.21	1.45	4.42	2.68	0.04	100.00	5.45	
UA1223-17	75.43	0.11	14.81	0.89	0.10	0.29	1.31	4.32	2.71	0.03	100.00	4.78	
UA1075-3	75.29	0.10	14.85	0.90	0.10	0.25	1.45	4.36	2.66	0.05	100.00	5.48	Mar. 27 2006
UA1075-4	74.78	0.11	14.99	0.98	0.11	0.23	1.55	4.47	2.75	0.03	100.00	10.56	

UA1075-7	75.20	0.09	14.84	0.87	0.10	0.25	1.55	4.44	2.62	0.04	100.00	6.71
UA1075-8	75.44	0.11	14.79	0.93	0.05	0.27	1.43	4.29	2.64	0.06	100.00	5.93
UA1075-9	75.52	0.12	14.74	0.89	0.08	0.26	1.45	4.17	2.74	0.02	100.00	6.02
UA1075-10	75.51	0.13	14.74	0.94	0.05	0.26	1.32	4.28	2.72	0.04	100.00	6.58
UA1075-11	75.37	0.07	14.70	0.94	0.02	0.27	1.47	4.37	2.76	0.04	100.00	5.56
UA1075-12	75.33	0.15	14.66	0.96	0.04	0.25	1.41	4.29	2.89	0.03	100.00	5.28
UA1075-13	75.10	0.09	15.02	0.94	0.11	0.30	1.42	4.44	2.58	0.01	100.00	6.03
UA1075-14	75.45	0.10	14.88	0.93	0.06	0.28	1.48	4.19	2.61	0.04	100.00	7.35
UA1075-15	75.15	0.08	15.01	0.94	0.07	0.24	1.49	4.28	2.71	0.04	100.00	6.86
UA1075-16	75.53	0.11	14.67	0.88	0.08	0.23	1.38	4.31	2.80	0.03	100.00	6.01
UA1075-17	74.83	0.09	14.97	0.90	0.10	0.27	1.42	4.67	2.72	0.04	100.00	4.19
UA1075-18	75.07	0.09	15.15	0.93	0.08	0.21	1.59	4.25	2.59	0.04	100.00	6.05
UA1075-19	75.67	0.08	14.93	0.93	0.02	0.27	1.43	4.07	2.59	0.02	100.00	6.79
UA1075-20	75.52	0.12	14.58	0.94	0.09	0.32	1.35	4.34	2.68	0.06	100.00	5.71
UA1075-21	75.43	0.16	14.46	0.93	0.06	0.27	1.46	4.40	2.82	0.01	100.00	5.78
UA1075-22	75.10	0.10	14.89	0.84	0.10	0.26	1.54	4.41	2.74	0.03	100.00	6.01
UA1075-23	75.05	0.12	14.96	0.93	0.06	0.22	1.49	4.49	2.62	0.06	100.00	5.85
UA1075-25	75.04	0.12	14.84	0.95	0.10	0.24	1.49	4.55	2.64	0.02	100.00	6.45
UA1075-24	75.69	0.17	15.10	0.91	0.03	0.27	1.54	3.63	2.64	0.03	100.00	9.21
UA1075-2	74.95	0.07	15.09	0.87	0.08	0.28	1.59	4.40	2.63	0.03	100.00	6.21
UA1075-3	74.96	0.18	14.77	0.91	0.03	0.26	1.34	4.75	2.81	0.00	100.00	6.47
UA1075-4	75.34	0.13	14.90	0.86	0.08	0.26	1.41	4.39	2.62	0.00	100.00	6.15
UA1075-5	75.23	0.11	14.81	0.98	0.06	0.28	1.33	4.49	2.66	0.05	100.00	6.54
UA1075-6	75.32	0.11	14.77	0.92	0.05	0.29	1.44	4.29	2.78	0.04	100.00	6.10
UA1075-7	74.75	0.12	15.20	0.88	0.07	0.26	1.48	4.53	2.65	0.06	100.00	5.72
UA1075-8	75.06	0.09	15.01	0.83	0.08	0.28	1.44	4.45	2.74	0.02	100.00	5.67
UA1075-9	74.97	0.12	15.19	0.92	0.11	0.26	1.43	4.15	2.78	0.07	100.00	7.04
UA1075-10	74.98	0.13	14.74	0.85	0.04	0.27	1.48	4.71	2.75	0.04	100.00	6.62
UA1075-11	75.00	0.11	14.91	0.98	0.07	0.27	1.49	4.48	2.63	0.06	100.00	7.48
UA1075-13	74.98	0.10	14.96	0.97	0.12	0.25	1.43	4.52	2.64	0.02	100.00	6.39
UA1075-14	75.09	0.09	14.97	0.89	0.02	0.27	1.47	4.40	2.76	0.03	100.00	8.71
UA1075-15	75.08	0.06	15.16	0.85	0.08	0.26	1.47	4.44	2.59	0.02	100.00	7.18
UA1075-16	74.98	0.10	14.88	0.88	0.05	0.21	1.37	4.73	2.76	0.03	100.00	6.20
UA1075-18	74.99	0.17	14.92	0.90	0.07	0.29	1.49	4.40	2.70	0.07	100.00	6.99

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	UA1075-19	75.57	0.11	14.75	0.86	0.09	0.25	1.36	4.21	2.76	0.04	100.00	6.16	
	UA1075-20	75.00	0.11	15.09	0.83	0.09	0.27	1.43	4.39	2.71	0.08	100.00	6.43	
	UA1076-1	75.53	0.07	15.01	0.95	0.10	0.28	1.45	3.90	2.67	0.06	100.00	8.49	Mar. 27 2006
	UA1076-2	75.49	0.11	14.92	0.93	0.06	0.23	1.44	4.21	2.57	0.04	100.00	7.01	
	UA1076-3	74.98	0.11	14.92	0.98	0.13	0.33	1.40	4.43	2.68	0.03	100.00	6.06	
	UA1076-4	75.43	0.08	14.76	0.84	0.12	0.27	1.48	4.36	2.64	0.02	100.00	5.99	
	UA1076-5	75.38	0.09	14.78	0.91	0.09	0.19	1.49	4.43	2.60	0.05	100.00	5.40	
	UA1076-6	74.98	0.09	14.60	0.94	0.08	0.30	1.40	4.99	2.57	0.04	100.00	8.34	
	UA1076-7	74.96	0.13	14.80	0.98	0.06	0.37	1.53	4.43	2.70	0.04	100.00	5.58	
	UA1076-8	75.05	0.15	14.81	0.97	0.09	0.24	1.43	4.47	2.73	0.06	100.00	6.14	
	UA1076-9	75.42	0.17	14.78	0.90	0.00	0.27	1.50	4.21	2.70	0.04	100.00	6.45	
	UA1076-10	74.99	0.16	14.90	1.00	0.08	0.33	1.42	4.37	2.70	0.05	100.00	6.52	
	UA1076-11	74.78	0.11	15.06	0.98	0.05	0.26	1.51	4.52	2.66	0.04	100.00	5.17	
	UA1076-12	75.73	0.08	14.56	0.96	0.10	0.25	1.40	4.18	2.71	0.03	100.00	5.75	
	UA1076-13	74.90	0.10	14.99	0.92	0.11	0.30	1.46	4.42	2.76	0.06	100.00	4.85	
	UA1076-14	75.59	0.08	14.52	1.00	0.04	0.27	1.40	4.29	2.78	0.02	100.00	5.81	
	UA1076-15	75.36	0.12	14.67	0.97	0.08	0.31	1.31	4.40	2.78	0.00	100.00	5.33	
	UA1076-16	75.10	0.10	14.98	0.83	0.07	0.22	1.57	4.66	2.44	0.02	100.00	5.08	
	UA1076-17	75.03	0.10	14.77	0.90	0.11	0.26	1.50	4.72	2.61	0.02	100.00	4.92	
	UA1076-18	74.99	0.13	14.95	0.96	0.02	0.30	1.47	4.44	2.70	0.04	100.00	5.53	
	UA1076-19	75.46	0.13	14.72	0.93	0.09	0.26	1.43	4.19	2.74	0.03	100.00	5.03	
	UA1076-21	75.44	0.13	14.50	0.92	0.08	0.26	1.43	4.43	2.79	0.02	100.00	6.02	
	UA1076-22	75.30	0.16	14.87	0.86	0.06	0.22	1.39	4.33	2.78	0.03	100.00	5.53	
	UA1076-23	75.22	0.13	14.89	0.90	0.07	0.23	1.50	4.21	2.82	0.03	100.00	6.49	
	UA1076-24	75.16	0.05	15.25	0.84	0.04	0.26	1.49	4.16	2.70	0.06	100.00	6.15	
	UA1076-25	74.85	0.21	15.15	0.93	0.07	0.27	1.45	4.34	2.72	0.02	100.00	7.53	
	AVERAGE	75.20	0.11	14.87	0.92	0.07	0.26	1.45	4.38	2.69	0.04	100.00	6.32	
	STDEV	0.25	0.03	0.18	0.05	0.03	0.03	0.06	0.20	0.08	0.02	0.00	1.07	n=439
VT	**UA1097-1**	71.03	0.57	14.57	3.23	0.12	0.61	2.40	4.36	2.96	0.14	100.00	1.66	Mar. 28 2006
	UA1097-3	70.50	0.50	14.95	3.25	0.11	0.63	2.52	4.43	2.95	0.17	100.00	3.84	
	UA1097-4	70.93	0.47	14.69	3.10	0.13	0.63	2.38	4.48	3.01	0.19	100.00	1.82	
	UA1097-5	71.04	0.55	14.69	2.98	0.10	0.61	2.29	4.50	3.04	0.20	100.00	2.76	
	UA1097-6	70.87	0.53	14.60	3.24	0.12	0.68	2.43	4.40	2.99	0.15	100.00	2.48	

UA1097-12	70.59	0.66	14.79	3.12	0.12	0.67	2.58	4.27	3.03	0.18	100.00	1.76	
UA1097-13	71.24	0.53	14.66	3.15	0.12	0.64	2.44	4.12	2.92	0.19	100.00	1.06	
UA1097-14	70.31	0.66	14.61	3.26	0.13	0.66	2.54	4.76	2.91	0.15	100.00	2.93	
UA1097-16	70.70	0.54	14.79	3.24	0.12	0.59	2.61	4.30	2.92	0.21	100.00	1.25	
UA 1097-1	70.88	0.57	14.74	3.07	0.13	0.64	2.25	4.63	2.91	0.18	100.00	2.11	Nov. 29 206
UA 1097-2	70.47	0.58	14.93	3.11	0.11	0.65	2.42	4.69	2.91	0.14	100.00	0.74	
UA 1097-3	70.69	0.56	14.94	3.07	0.08	0.66	2.42	4.48	2.92	0.18	100.00	-0.05	
UA 1097-4	70.40	0.63	14.84	3.34	0.14	0.72	2.51	4.40	2.86	0.17	100.00	-0.47	
UA 1097-7	71.38	0.54	14.42	3.06	0.14	0.61	2.30	4.44	2.96	0.14	100.00	5.27	
UA 1097-8	70.87	0.55	14.63	2.99	0.09	0.65	2.44	4.50	3.06	0.20	100.00	1.81	
UA 1097-9	70.70	0.65	14.84	3.15	0.13	0.65	2.45	4.36	2.96	0.12	100.00	1.36	
UA 1097-10	70.97	0.60	14.76	3.00	0.13	0.64	2.34	4.47	2.89	0.20	100.00	5.97	
UA 1097-11	70.52	0.56	14.90	2.99	0.10	0.62	2.40	4.69	3.00	0.23	100.00	0.58	
UA 1097-12	70.91	0.54	14.78	2.91	0.12	0.61	2.42	4.60	2.92	0.18	100.00	1.33	
UA 1097-14	71.10	0.55	14.73	2.97	0.12	0.66	2.31	4.51	2.89	0.17	100.00	3.66	
UA 1097-16	70.67	0.61	14.89	2.98	0.06	0.58	2.23	4.90	2.88	0.19	100.00	3.26	
UA 1097-17	71.03	0.51	14.83	3.02	0.14	0.59	2.18	4.65	2.94	0.13	100.00	0.97	
UA 1097-18	70.67	0.54	14.87	2.96	0.06	0.70	2.33	4.74	3.01	0.13	100.00	1.11	
UA 1097-19	70.72	0.59	14.46	3.12	0.13	0.69	2.44	4.71	3.00	0.15	100.00	3.73	
UA 1097-20	70.30	0.52	15.13	2.87	0.06	0.65	2.64	4.71	2.96	0.16	100.00	5.72	
UA 1097-21	70.90	0.41	14.89	2.92	0.11	0.64	2.36	4.59	3.01	0.18	100.00	1.79	
UA1097-1	70.74	0.53	14.51	3.10	0.11	0.61	2.38	4.94	2.92	0.16	100.00	1.14	Nov. 30 206
UA1097-2	70.33	0.59	14.84	3.11	0.15	0.76	2.52	4.69	2.84	0.18	100.00	1.05	
UA1097-3	70.59	0.60	14.96	3.12	0.09	0.67	2.44	4.37	3.01	0.15	100.00	2.00	
UA1097-5	71.02	0.60	14.69	3.12	0.09	0.64	2.35	4.51	2.81	0.18	100.00	2.80	
UA1097-8	70.88	0.53	14.88	3.12	0.13	0.64	2.26	4.53	2.87	0.15	100.00	1.38	
UA1097-9	70.33	0.61	14.75	3.12	0.13	0.75	2.52	4.60	3.03	0.16	100.00	2.16	
UA 1097-5	69.44	0.62	14.98	3.73	0.11	0.93	2.86	4.54	2.63	0.17	100.00	1.52	
UA 1097-15	69.47	0.56	15.07	3.36	0.12	0.90	2.80	4.62	2.97	0.14	100.00	7.28	
UA 1097-22	69.98	0.55	14.93	3.29	0.11	0.72	2.51	4.94	2.77	0.19	100.00	2.03	
UA1097-7	69.16	0.58	15.15	3.79	0.10	0.94	2.87	4.56	2.69	0.16	100.00	2.89	Mar. 28 2006
AVERAGE	70.62	0.56	14.80	3.14	0.11	0.67	2.45	4.56	2.93	0.17	100.00	2.30	
STDEV	0.49	0.05	0.17	0.20	0.02	0.09	0.16	0.18	0.09	0.02	0.00	1.69	n=36
UA 1097-13	63.86	0.80	16.16	5.75	0.16	1.71	4.60	4.85	1.95	0.17	100.00	1.51	

	UA 1097-6	66.02	0.69	16.07	4.78	0.12	1.41	4.03	4.65	2.11	0.12	100.00	1.26	
	UA 1097-23	64.81	0.71	16.14	5.23	0.12	1.55	4.37	4.65	2.29	0.12	100.00	1.36	
	UA1097-15	67.09	0.76	15.65	4.24	0.16	1.13	3.80	4.56	2.44	0.17	100.00	1.74	Mar. 28 2006
	AVERAGE	65.45	0.74	16.01	5.00	0.14	1.45	4.20	4.68	2.20	0.15	100.00	1.47	
	STDEV	1.41	0.05	0.24	0.64	0.03	0.24	0.36	0.12	0.21	0.03	0.00	0.21	n=4
WC	**UA1098-1**	72.79	0.23	15.46	1.66	0.01	0.56	2.28	4.39	2.62	0.02	100.00	2.68	Mar. 28 2006
	UA1098-2	74.66	0.16	14.62	1.26	0.03	0.40	1.85	4.39	2.60	0.04	100.00	3.70	
	UA1098-3	74.75	0.15	14.96	1.24	0.03	0.41	1.88	4.12	2.42	0.04	100.00	4.31	
	UA1098-4	74.72	0.16	14.71	1.26	0.01	0.44	1.86	4.32	2.51	0.02	100.00	4.53	
	UA1098-5	74.75	0.24	14.77	1.20	0.04	0.41	1.86	4.16	2.53	0.04	100.00	3.30	
	UA1098-6	74.97	0.14	14.96	1.23	0.04	0.45	1.81	3.88	2.50	0.01	100.00	6.41	
	UA1098-9	74.73	0.15	14.87	1.25	0.02	0.41	1.80	4.26	2.49	0.03	100.00	5.21	
	UA1098-10	74.95	0.15	14.73	1.22	0.06	0.43	1.79	3.98	2.63	0.06	100.00	5.74	
	UA1098-11	74.62	0.16	14.87	1.33	0.00	0.43	1.85	4.16	2.57	0.01	100.00	5.62	
	UA1098-12	74.10	0.17	14.99	1.36	0.03	0.53	1.87	4.38	2.54	0.03	100.00	5.33	
	UA1098-13	74.65	0.15	14.68	1.29	0.03	0.51	1.83	4.05	2.78	0.05	100.00	6.09	
	UA1098-14	72.16	0.28	15.51	1.75	0.05	0.59	2.42	4.50	2.72	0.01	100.00	3.70	
	UA1098-15	74.48	0.16	15.03	1.28	0.06	0.43	1.84	4.15	2.55	0.02	100.00	4.90	
	UA1098-1	73.92	0.14	15.24	1.29	0.03	0.50	1.98	4.27	2.60	0.03	100.00	5.71	Sept. 27 2006
	UA1098-2	74.65	0.16	14.79	1.18	0.08	0.52	1.91	4.24	2.46	0.03	100.00	5.19	
	UA1098-3	74.70	0.13	14.67	1.21	0.04	0.46	1.90	4.29	2.59	0.00	100.00	4.76	
	UA1098-4	69.36	0.31	16.53	2.05	0.04	0.89	3.11	4.67	2.98	0.07	100.00	9.03	
	UA1098-5	74.12	0.12	14.98	1.28	0.01	0.52	1.87	4.53	2.54	0.03	100.00	2.69	
	UA1098-6	73.82	0.13	15.17	1.33	0.00	0.48	1.93	4.26	2.86	0.02	100.00	5.97	
	UA1098-7	74.43	0.22	14.89	1.18	0.03	0.45	1.85	4.30	2.62	0.03	100.00	6.66	
	UA1098-8	74.24	0.18	15.35	1.23	0.07	0.44	1.85	3.97	2.61	0.05	100.00	6.05	
	UA1098-10	74.32	0.10	14.68	1.28	0.09	0.49	1.86	4.43	2.69	0.05	100.00	6.93	
	UA1098-11	73.98	0.17	14.93	1.30	0.04	0.45	1.95	4.51	2.66	0.02	100.00	5.54	
	UA1212-1	72.66	0.24	15.36	1.52	0.01	0.58	2.18	4.71	2.70	0.04	100.00	6.14	Sept. 27 2006
	UA1212-2	72.19	0.31	15.43	1.75	0.01	0.68	2.31	4.53	2.75	0.04	100.00	0.06	
	UA1212-3	74.28	0.19	15.02	1.17	0.03	0.43	1.97	4.43	2.43	0.04	100.00	4.96	
	UA1212-4	74.03	0.19	15.18	1.34	0.06	0.42	1.94	4.16	2.62	0.06	100.00	10.63	
	UA1212-5	73.88	0.22	14.91	1.24	0.03	0.50	1.97	4.58	2.59	0.07	100.00	5.20	

	UA1212-6	74.80	0.19	14.65	1.21	0.05	0.44	1.80	4.28	2.54	0.03	100.00	6.09	
	UA1212-7	73.72	0.18	15.00	1.45	0.10	0.50	2.05	4.23	2.75	0.03	100.00	5.16	
	UA1212-12	73.79	0.21	15.12	1.45	0.04	0.46	2.10	4.22	2.57	0.03	100.00	4.71	
	UA1212-13	74.37	0.17	14.76	1.30	0.05	0.44	1.91	4.29	2.67	0.05	100.00	6.82	
	UA1213-1	72.32	0.23	15.66	1.62	0.05	0.59	2.43	4.31	2.75	0.05	100.00	5.06	Sept. 27 2006
	UA1213-3	75.10	0.10	14.82	1.18	0.03	0.39	2.00	3.78	2.55	0.05	100.00	7.02	
	UA1213-4	74.45	0.05	15.12	1.21	0.00	0.43	1.96	4.19	2.55	0.02	100.00	5.06	
	UA1213-5	74.20	0.18	14.91	1.24	0.03	0.48	1.90	4.31	2.69	0.06	100.00	3.27	
	UA1213-6	74.64	0.18	14.75	1.15	0.06	0.45	1.87	4.35	2.51	0.04	100.00	5.72	
	UA1213-7	74.82	0.23	14.75	1.24	0.02	0.47	1.97	4.03	2.45	0.04	100.00	4.64	
	UA1213-8	73.50	0.31	15.22	1.44	0.06	0.50	1.96	4.29	2.69	0.02	100.00	5.39	
	UA1213-9	72.88	0.29	15.44	1.58	0.04	0.53	2.21	4.38	2.66	0.00	100.00	3.74	
	UA1213-10	72.14	0.21	15.68	1.74	0.05	0.61	2.36	4.26	2.91	0.04	100.00	9.38	
	UA1213-11	73.00	0.15	15.34	1.58	0.02	0.55	2.17	4.46	2.72	0.02	100.00	2.69	
	UA1213-12	74.57	0.10	14.79	1.21	0.09	0.44	1.82	4.32	2.65	0.02	100.00	7.36	
	UA1213-13	74.57	0.17	14.98	1.22	0.02	0.44	1.89	4.25	2.45	0.03	100.00	5.76	
	UA1214-1	70.25	0.34	16.19	2.12	0.06	0.78	2.79	4.39	3.05	0.04	100.00	4.60	Sept. 27 2006
	UA1214-2	74.44	0.20	14.97	1.24	0.03	0.45	1.89	4.06	2.68	0.04	100.00	6.45	
	UA1214-3	74.18	0.16	15.11	1.26	0.03	0.44	2.00	4.30	2.48	0.03	100.00	5.80	
	UA1214-4	71.91	0.23	15.77	1.79	0.06	0.65	2.39	4.48	2.66	0.06	100.00	2.36	
	UA1214-5	72.03	0.30	15.75	1.70	0.08	0.53	2.44	4.47	2.66	0.04	100.00	1.94	
	UA1214-6	74.94	0.14	14.77	1.21	0.05	0.38	1.83	4.07	2.56	0.05	100.00	5.19	
	UA1214-7	75.08	0.20	14.71	1.20	0.03	0.40	1.84	4.05	2.44	0.05	100.00	4.63	
	UA1214-8	74.66	0.14	14.82	1.19	0.00	0.45	1.90	4.16	2.63	0.05	100.00	5.68	
	UA1214-9	70.53	0.30	16.35	1.95	0.03	0.66	2.79	4.56	2.81	0.02	100.00	5.36	
	UA1214-11	74.50	0.16	15.11	1.34	0.00	0.43	1.93	4.02	2.48	0.02	100.00	6.78	
	UA1214-12	72.77	0.23	15.56	1.59	0.00	0.58	2.31	4.26	2.65	0.05	100.00	3.51	
	AVERAGE	73.80	0.19	15.12	1.38	0.04	0.50	2.04	4.28	2.63	0.03	100.00	5.22	
	STDEV	1.28	0.06	0.43	0.24	0.02	0.10	0.28	0.19	0.13	0.02	0.00	1.79	n=55
BC	UA1235-4	75.31	0.24	13.15	1.57	0.03	0.23	1.27	3.40	4.28	0.52	100.00	4.24	Sept. 28 2006
	UA1235-6	74.76	0.20	13.11	1.78	0.05	0.22	1.26	3.65	4.45	0.50	100.00	3.92	
	UA1235-8	74.83	0.23	13.13	1.71	0.03	0.25	1.23	3.62	4.53	0.45	100.00	4.40	
	AVERAGE	74.97	0.22	13.13	1.69	0.04	0.24	1.25	3.56	4.42	0.49	100.00	4.19	

	STDEV	0.30	0.02	0.02	0.11	0.01	0.01	0.02	0.13	0.12	0.04	0.00	0.24	n=3
	UA1235-2	66.80	0.67	16.08	4.00	0.07	1.39	4.40	4.51	2.03	0.05	100.00	0.59	
	UA1235-3	66.00	0.65	16.10	4.28	0.12	1.51	4.90	4.54	1.87	0.04	100.00	0.23	
	UA1235-5	66.42	0.60	16.19	4.22	0.04	1.42	4.65	4.41	2.00	0.06	100.00	0.55	
	UA1235-7	66.07	0.66	16.25	4.20	0.05	1.51	4.61	4.56	2.02	0.06	100.00	0.58	
	UA1235-9	66.34	0.65	16.25	4.05	0.10	1.41	4.47	4.75	1.94	0.03	100.00	-0.69	
	UA1235-10	66.76	0.58	16.19	4.10	0.03	1.49	4.20	4.59	2.02	0.03	100.00	0.17	
	UA1235-11	66.40	0.54	16.24	4.38	0.11	1.55	4.23	4.54	1.98	0.02	100.00	0.41	
	UA1235-12	66.24	0.61	16.28	4.31	0.04	1.59	4.48	4.33	2.08	0.04	100.00	-1.06	
	UA1235-13	66.70	0.66	16.47	4.03	0.04	1.43	4.24	4.43	1.96	0.04	100.00	-0.03	
	UA1235-14	66.61	0.60	16.01	4.34	0.07	1.53	4.75	4.07	1.97	0.06	100.00	2.44	
	UA1235-17	66.16	0.58	16.02	4.23	0.13	1.56	4.92	4.40	1.97	0.05	100.00	-0.86	
	UA1235-18	66.49	0.65	16.14	4.20	0.05	1.52	4.50	4.49	1.95	0.00	100.00	0.48	
	UA1235-19	66.36	0.52	16.18	4.29	0.05	1.66	4.49	4.48	1.93	0.04	100.00	0.81	
	UA1235-20	66.50	0.64	16.12	4.06	0.11	1.51	4.66	4.47	1.92	0.00	100.00	-0.74	
	AVERAGE	66.42	0.61	16.18	4.19	0.07	1.51	4.54	4.47	1.97	0.04	100.00	0.21	
	STDEV	0.25	0.05	0.12	0.12	0.03	0.07	0.23	0.15	0.05	0.02	0.00	0.89	n=14
TK	**UA1086-3**	72.75	0.26	15.75	1.73	0.07	0.52	1.90	4.29	2.67	0.06	100.00	8.07	Apr. 27 2006
	UA1086-16	72.57	0.26	15.82	1.69	0.04	0.53	1.87	4.42	2.77	0.03	100.00	6.08	
	UA1086-4	71.41	0.17	16.43	1.55	0.07	0.52	2.32	4.93	2.57	0.03	100.00	8.64	Nov. 29 2006
	UA1086-6	72.69	0.20	16.00	1.58	0.11	0.47	1.84	4.15	2.88	0.08	100.00	5.42	
	UA1086-7	71.70	0.16	16.63	1.47	0.09	0.57	2.45	4.57	2.32	0.05	100.00	4.70	
	UA1086-8	71.47	0.24	16.55	1.45	0.06	0.59	2.30	4.90	2.43	0.01	100.00	5.35	
	UA1086-9	72.18	0.14	16.40	1.52	0.08	0.55	2.36	4.18	2.50	0.08	100.00	6.61	
	UA1086-10	71.66	0.23	16.79	1.52	0.12	0.53	2.28	4.30	2.52	0.04	100.00	6.62	
	UA1086-12	71.42	0.22	16.47	1.54	0.04	0.58	2.36	4.82	2.51	0.05	100.00	5.07	
	UA1086-13	71.49	0.17	16.54	1.55	0.05	0.54	2.40	4.76	2.48	0.02	100.00	3.14	
	UA1086-14	71.22	0.21	16.78	1.65	0.08	0.50	2.31	4.70	2.51	0.04	100.00	6.07	
	UA1086-15	71.96	0.18	16.32	1.52	0.10	0.47	2.36	4.49	2.54	0.06	100.00	7.50	
	UA1086-17	71.88	0.21	16.52	1.54	0.05	0.57	2.27	4.30	2.61	0.05	100.00	6.57	
	UA1219-1	71.75	0.29	16.44	1.56	0.04	0.52	2.37	4.35	2.63	0.04	100.00	6.28	Sept. 28 2006
	UA1219-2	71.80	0.17	16.55	1.62	0.07	0.54	2.45	4.20	2.59	0.03	100.00	5.48	
	UA1219-3	71.81	0.17	16.70	1.48	0.06	0.52	2.47	4.29	2.47	0.03	100.00	5.11	

	UA1219-4	71.48	0.21	16.60	1.62	0.07	0.51	2.40	4.42	2.66	0.03	100.00	6.17	
	UA1219-6	71.98	0.26	16.52	1.41	0.10	0.51	2.32	4.41	2.49	0.00	100.00	5.12	
	UA1219-7	71.69	0.26	16.70	1.62	0.01	0.52	2.42	4.12	2.63	0.02	100.00	8.24	
	UA1219-9	71.22	0.21	16.51	1.57	0.07	0.52	2.53	4.65	2.63	0.10	100.00	6.07	
	UA1219-11	71.70	0.22	16.47	1.57	0.05	0.58	2.44	4.40	2.52	0.05	100.00	5.24	
	UA1219-13	71.20	0.21	16.65	1.58	0.10	0.53	2.34	4.80	2.55	0.05	100.00	3.26	
	UA1219-14	71.18	0.17	16.43	1.60	0.15	0.55	2.43	4.78	2.66	0.05	100.00	5.06	
	UA1219-15	71.70	0.21	16.62	1.55	0.05	0.54	2.32	4.51	2.45	0.05	100.00	5.28	
	UA1219-16	71.72	0.21	16.51	1.57	0.06	0.55	2.49	4.35	2.52	0.03	100.00	6.55	
	UA1219-17	71.60	0.18	16.56	1.64	0.09	0.56	2.41	4.56	2.38	0.02	100.00	4.95	
	UA1219-18	71.65	0.20	16.67	1.50	0.04	0.52	2.34	4.51	2.54	0.03	100.00	4.38	
	UA1219-1	70.41	0.20	17.12	1.65	0.10	0.54	2.44	4.91	2.58	0.04	100.00	5.08	Oct. 30 2006
	UA1219-2	71.75	0.18	16.54	1.54	0.08	0.52	2.47	4.33	2.56	0.03	100.00	4.93	
	UA1219-4	71.76	0.18	16.70	1.53	0.03	0.49	2.37	4.50	2.40	0.04	100.00	4.64	
	UA1224-1	71.52	0.12	16.33	1.49	0.08	0.54	2.31	4.85	2.70	0.06	100.00	1.87	Sept. 28 2006
	UA1224-2	71.65	0.16	16.70	1.49	0.08	0.57	2.37	4.42	2.52	0.05	100.00	5.95	
	UA1224-3	71.51	0.18	16.29	1.64	0.09	0.52	2.37	4.60	2.75	0.05	100.00	2.43	
	UA1224-4	71.72	0.22	16.34	1.45	0.13	0.50	2.42	4.55	2.62	0.03	100.00	5.19	
	UA1224-5	71.72	0.20	16.43	1.47	0.10	0.52	2.49	4.47	2.55	0.06	100.00	6.03	
	UA1224-6	71.24	0.30	16.58	1.54	0.11	0.53	2.51	4.69	2.47	0.03	100.00	6.57	
	UA1224-9	71.23	0.21	16.72	1.34	0.05	0.56	2.40	5.05	2.39	0.05	100.00	9.29	
	UA1224-10	71.42	0.24	16.61	1.61	0.05	0.51	2.34	4.61	2.57	0.05	100.00	7.29	
	UA1224-11	71.74	0.26	16.14	1.80	0.08	0.58	2.48	4.12	2.74	0.06	100.00	18.65	
	UA1224-12	71.75	0.18	16.38	1.53	0.08	0.51	2.44	4.46	2.62	0.05	100.00	9.03	
	AVERAGE	71.66	0.21	16.49	1.56	0.07	0.53	2.35	4.52	2.56	0.04	100.00	6.10	
	STDEV	0.42	0.04	0.25	0.09	0.03	0.03	0.15	0.24	0.11	0.02	0.00	2.59	n=40
YT	**UA1232-1**	75.85	0.15	14.71	0.89	0.08	0.21	1.29	4.17	2.65	0.00	100.00	5.86	Nov. 29 2006
	UA1232-2	75.39	0.08	14.73	0.89	0.06	0.26	1.24	4.49	2.83	0.03	100.00	5.19	
	UA1232-9	75.84	0.10	14.71	0.91	0.08	0.29	1.33	3.99	2.74	0.01	100.00	6.22	
	UA1232-11	75.33	0.19	14.68	0.90	0.06	0.26	1.28	4.48	2.75	0.07	100.00	5.18	
	UA1232-12	75.24	0.10	14.85	0.94	0.10	0.28	1.40	4.35	2.71	0.04	100.00	5.35	
	UA1232-20	75.34	0.09	15.05	0.92	0.11	0.29	1.22	4.27	2.69	0.03	100.00	5.64	
	UA1232-24	75.57	0.17	14.93	0.84	0.12	0.25	1.31	4.07	2.70	0.03	100.00	6.38	

	AVERAGE	75.51	0.12	14.81	0.90	0.09	0.26	1.30	4.26	2.72	0.03	100.00	5.69	
	STDEV	0.25	0.04	0.14	0.03	0.02	0.03	0.06	0.19	0.06	0.02	0.00	0.49	n=7
	UA1232-4	79.37	0.37	11.50	0.99	0.05	0.14	0.53	3.59	3.44	0.01	100.00	5.38	
	UA1232-15	79.31	0.29	11.36	0.97	0.00	0.15	0.57	3.51	3.74	0.08	100.00	5.46	
	UA1232-21	79.98	0.34	11.21	0.86	0.00	0.16	0.36	3.57	3.47	0.05	100.00	5.11	
	UA1232-22	79.44	0.30	11.43	0.94	0.09	0.11	0.40	3.47	3.80	0.01	100.00	3.92	
	UA1232-23	79.66	0.25	11.55	0.87	0.03	0.07	0.33	3.38	3.82	0.04	100.00	4.49	
	AVERAGE	79.55	0.31	11.41	0.93	0.03	0.13	0.44	3.50	3.65	0.04	100.00	4.87	
	STDEV	0.27	0.05	0.13	0.06	0.04	0.03	0.11	0.09	0.19	0.03	0.00	0.66	n=5
	UA1232-6	62.89	0.78	17.48	5.40	0.07	2.04	4.84	4.73	1.73	0.04	100.00	0.89	
	UA1232-8	62.99	0.83	17.23	5.38	0.09	2.22	4.84	4.48	1.89	0.04	100.00	0.02	
	UA1232-13	62.89	0.85	17.33	5.33	0.09	1.97	4.96	4.88	1.66	0.04	100.00	1.51	
	UA1232-19	62.86	0.84	17.46	5.46	0.05	1.98	4.99	4.48	1.78	0.08	100.00	2.40	
	UA1232-25	63.17	0.79	17.37	5.48	0.09	1.96	4.98	4.40	1.74	0.02	100.00	1.54	
	AVERAGE	62.96	0.82	17.38	5.41	0.08	2.03	4.92	4.59	1.76	0.04	100.00	1.27	
	STDEV	0.12	0.03	0.10	0.06	0.02	0.11	0.08	0.20	0.09	0.02	0.00	0.88	n=5
WRN	**UA1044-1**	74.24	0.23	14.47	1.49	0.04	0.26	1.73	4.13	3.08	0.32	100.00	2.22	Oct-05
	UA1044-2	74.26	0.11	14.36	1.47	0.03	0.26	1.90	4.17	3.11	0.33	100.00	2.80	
	UA1044-3	75.63	0.24	13.34	1.50	0.03	0.30	1.40	3.91	3.33	0.31	100.00	2.20	
	UA1044-4	75.40	0.12	14.03	1.32	0.06	0.23	1.53	3.94	3.09	0.28	100.00	2.36	
	UA1044-5	75.13	0.25	13.84	1.33	0.01	0.23	1.50	4.03	3.39	0.30	100.00	3.55	
	UA1044-8	74.13	0.23	14.25	1.74	0.05	0.33	1.65	4.05	3.33	0.24	100.00	1.57	
	UA1044-9	75.49	0.16	13.63	1.43	0.00	0.27	1.39	4.06	3.30	0.27	100.00	1.63	
	UA1044-10	75.09	0.17	13.82	1.37	0.00	0.24	1.58	4.28	3.17	0.28	100.00	1.46	
	UA1044-11	73.56	0.30	14.50	1.62	0.07	0.33	1.72	4.34	3.20	0.37	100.00	1.68	
	UA1044-12	74.23	0.18	14.22	1.72	0.03	0.34	1.58	4.13	3.25	0.33	100.00	1.25	
	UA1044-13	74.03	0.23	14.17	1.75	0.08	0.36	1.50	4.07	3.47	0.35	100.00	1.69	
	UA1044-14	73.86	0.28	14.36	1.71	0.12	0.33	1.70	4.07	3.27	0.30	100.00	1.07	
	UA1044-15	73.45	0.20	14.87	1.61	0.11	0.32	1.63	4.06	3.42	0.33	100.00	1.26	
	UA1044-17	73.44	0.29	14.58	1.71	0.06	0.38	1.79	4.10	3.32	0.32	100.00	1.61	
	UA1044-19	74.10	0.29	14.14	1.64	0.09	0.40	1.67	4.11	3.25	0.30	100.00	1.44	
	UA 1044-1	74.10	0.26	14.08	1.80	0.08	0.34	1.61	4.05	3.39	0.30	100.00	3.59	May-05
	UA 1044-3	73.84	0.24	14.85	1.70	0.06	0.38	1.81	3.58	3.22	0.33	100.00	3.74	

UA 1044-4	75.02	0.13	13.95	1.29	0.09	0.28	1.52	4.03	3.34	0.35	100.00	4.88	
UA 1044-6	73.72	0.15	14.51	1.62	0.08	0.40	1.80	4.17	3.24	0.32	100.00	2.65	
UA 1044-7	73.30	0.24	14.79	1.62	0.07	0.34	1.82	4.20	3.29	0.32	100.00	3.66	
UA 1044-8	74.45	0.14	14.13	1.43	0.06	0.32	1.57	4.19	3.40	0.31	100.00	4.61	
UA 1044-9	73.82	0.26	14.51	1.68	0.06	0.46	1.63	3.80	3.42	0.36	100.00	5.83	
UA 1044-11	72.74	0.15	15.58	1.58	0.10	0.35	1.75	4.07	3.36	0.31	100.00	5.35	
UA 1044-12	74.57	0.15	14.19	1.52	0.08	0.26	1.58	4.03	3.35	0.27	100.00	3.88	
UA 1044-14	74.99	0.22	13.63	1.62	0.04	0.36	1.35	3.88	3.59	0.33	100.00	2.97	
UA 1044-15	75.70	0.09	13.85	1.19	0.04	0.24	1.46	3.87	3.27	0.29	100.00	3.71	
UA 1044-16	75.61	0.14	13.95	1.20	0.11	0.24	1.49	3.81	3.19	0.24	100.00	2.00	
UA 1044-17	75.64	0.19	13.88	1.20	0.01	0.26	1.41	3.89	3.33	0.20	100.00	2.73	
UA 1044-18	75.86	0.10	13.64	1.31	0.05	0.28	1.49	3.74	3.31	0.22	100.00	3.22	
UA 1044-19	73.93	0.19	14.19	1.69	0.10	0.38	1.69	4.11	3.40	0.34	100.00	3.50	
UA 1044-20	73.95	0.23	14.35	1.56	0.07	0.29	1.72	4.21	3.20	0.40	100.00	3.24	
UA 1044-21	74.02	0.23	14.29	1.64	0.09	0.37	1.77	4.06	3.18	0.33	100.00	2.89	
UA 1044-22	73.72	0.16	14.46	1.83	0.05	0.36	1.77	4.06	3.25	0.35	100.00	2.13	
UA 1044-23	73.56	0.27	14.35	1.72	0.07	0.43	1.87	4.09	3.28	0.35	100.00	2.87	
UA 1044-24	74.02	0.25	14.41	1.59	0.01	0.35	1.77	4.11	3.16	0.33	100.00	2.14	
UA 1044-25	73.64	0.16	14.45	1.58	0.07	0.38	1.85	4.12	3.37	0.38	100.00	2.54	
UA1046-1	72.49	0.21	15.16	1.80	0.06	0.37	2.18	4.42	2.95	0.36	100.00	1.95	Oct-05
UA1046-3	72.65	0.29	15.12	1.90	0.03	0.43	2.12	4.20	2.91	0.35	100.00	1.48	
UA1046-6	75.30	0.10	14.23	0.94	0.05	0.08	1.72	4.38	3.01	0.22	100.00	2.09	
UA1046-7	72.31	0.23	15.15	1.82	0.02	0.39	2.24	4.37	3.14	0.32	100.00	1.99	
UA1046-8	72.53	0.34	15.28	1.84	0.06	0.35	2.19	4.03	3.06	0.32	100.00	2.14	
UA1046-9	75.36	0.20	14.01	1.33	0.05	0.22	1.38	3.98	3.24	0.23	100.00	1.58	
UA1046-10	75.84	0.08	13.74	1.26	0.04	0.21	1.38	3.92	3.26	0.27	100.00	0.76	
UA1046-12	72.10	0.30	14.72	2.18	0.03	0.43	2.23	4.29	3.32	0.40	100.00	4.49	
UA1046-13	72.16	0.27	15.16	1.90	0.08	0.45	2.36	4.34	2.95	0.34	100.00	1.89	
UA1046-14	72.46	0.28	15.22	1.87	0.05	0.38	2.16	4.29	2.93	0.35	100.00	1.55	
UA1046-15	72.11	0.17	15.26	1.89	0.06	0.41	2.34	4.33	3.08	0.34	100.00	1.89	
UA1046-16	72.23	0.32	14.77	2.15	0.02	0.43	2.34	4.11	3.21	0.42	100.00	9.74	
UA1046-17	72.11	0.24	15.00	2.01	0.03	0.46	2.41	4.33	3.03	0.38	100.00	1.26	
UA1046-18	72.19	0.20	15.29	1.86	0.06	0.39	2.36	4.30	3.03	0.31	100.00	1.58	
UA 1046-2	73.76	0.24	14.09	1.66	0.07	0.41	1.87	4.02	3.49	0.38	100.00	2.64	May-05

UA 1046-3	72.30	0.25	15.10	1.93	0.09	0.50	2.27	4.09	3.19	0.28	100.00	1.35
UA 1046-5	75.47	0.14	13.57	1.47	0.02	0.27	1.40	4.01	3.34	0.31	100.00	1.71
UA 1046-7	72.44	0.24	15.03	1.88	0.02	0.44	2.30	4.33	2.98	0.33	100.00	1.84
UA 1046-8	75.10	0.13	13.33	1.11	0.04	0.27	1.92	4.55	3.26	0.28	100.00	1.92
UA 1046-9	75.63	0.18	13.64	1.24	0.06	0.24	1.46	4.17	3.14	0.26	100.00	2.38
UA 1046-12	72.38	0.21	14.85	1.96	0.11	0.44	2.43	4.06	3.17	0.39	100.00	1.16
UA 1046-13	72.38	0.24	15.03	1.86	0.07	0.38	2.30	4.32	3.05	0.37	100.00	1.72
UA 1046-14	72.10	0.24	14.86	1.94	0.10	0.48	2.32	4.52	3.07	0.36	100.00	4.10
UA 1046-16	72.37	0.20	15.10	1.88	0.05	0.40	2.30	4.30	3.08	0.32	100.00	2.28
UA 1046-17	72.18	0.27	14.85	1.99	0.08	0.47	2.35	4.20	3.22	0.38	100.00	3.48
UA 1046-18	73.05	0.19	15.23	1.96	0.07	0.44	2.40	3.17	3.06	0.42	100.00	3.30
UA 1046-19	73.94	0.22	14.98	1.69	0.04	0.45	2.23	3.03	3.03	0.39	100.00	3.23
UA 1046-20	72.46	0.27	15.44	1.87	0.06	0.48	2.61	3.56	2.90	0.36	100.00	2.11
UA 1046-23	72.19	0.21	15.24	1.86	0.05	0.41	2.26	4.33	3.08	0.36	100.00	2.28
UA 1046-24	71.88	0.33	15.58	1.90	0.04	0.35	2.41	4.21	2.96	0.33	100.00	2.48
UA 1046-25	72.27	0.26	14.85	1.77	0.09	0.45	2.39	4.31	3.17	0.44	100.00	4.23
UT 1761-1	72.90	0.27	14.61	1.95	0.05	0.43	1.97	4.37	3.15	0.32	100.00	1.12
UT 1761-2	73.30	0.14	14.62	1.85	0.04	0.37	2.17	3.98	3.17	0.33	100.00	1.33
UT 1761-3	75.39	0.19	13.27	1.48	0.04	0.30	1.36	4.20	3.43	0.34	100.00	2.03
UT 1761-4	73.22	0.22	14.68	1.80	0.00	0.43	2.09	4.28	2.92	0.37	100.00	0.47
UT 1761-5	75.34	0.12	13.75	1.24	0.11	0.28	1.51	4.08	3.22	0.36	100.00	0.06
UT 1761-6	72.94	0.28	14.71	1.75	0.05	0.43	2.22	4.28	2.99	0.35	100.00	1.56
UT 1761-7	72.43	0.26	14.99	1.77	0.06	0.45	2.21	4.42	3.12	0.29	100.00	1.53
UT 1761-8	72.73	0.25	14.96	1.86	0.02	0.45	2.31	4.13	3.02	0.29	100.00	1.52
UT 1761-9	72.58	0.25	14.90	1.81	0.08	0.42	2.24	4.23	3.19	0.30	100.00	2.06
UT 1761-10	75.62	0.10	13.46	1.43	0.10	0.26	1.33	4.02	3.43	0.26	100.00	1.12
UT 1761-11	73.06	0.26	14.64	1.64	0.05	0.52	2.16	4.16	3.14	0.39	100.00	11.67
UT 1761-13	72.82	0.28	14.95	1.74	0.08	0.45	2.20	4.25	2.91	0.32	100.00	1.62
UT 1761-14	73.48	0.22	14.60	1.69	0.02	0.39	2.08	4.16	3.06	0.30	100.00	0.31
UT 1761-15	72.41	0.20	14.99	1.82	0.05	0.51	2.33	4.37	3.04	0.28	100.00	1.04
UT 1761-16	73.70	0.23	14.59	1.54	0.01	0.31	2.05	4.14	3.12	0.32	100.00	1.99
UT 1761-17	73.35	0.19	15.14	2.05	0.07	0.48	2.37	2.98	2.98	0.38	100.00	1.78
UT 1761-18	73.54	0.25	15.06	1.90	0.07	0.49	2.32	2.96	3.08	0.35	100.00	1.26
UT 1761-19	72.52	0.23	14.83	1.92	0.10	0.49	2.32	4.11	3.12	0.37	100.00	1.74

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	UT 1761-20	72.60	0.18	14.99	1.87	0.07	0.44	2.19	4.25	3.10	0.31	100.00	1.66	
	UT 1761-21	72.67	0.24	14.90	1.77	0.11	0.42	2.24	4.13	3.14	0.38	100.00	1.32	
	UT 1761-23	75.91	0.14	13.33	1.43	0.03	0.24	1.46	4.05	3.18	0.24	100.00	1.79	
	UT 1761-24	75.82	0.14	13.38	1.32	0.07	0.27	1.49	4.00	3.22	0.28	100.00	2.22	
	UT 1761-25	75.56	0.19	13.30	1.54	0.02	0.29	1.32	3.97	3.50	0.31	100.00	1.22	Dec-05
	UT1761-1	72.19	0.28	15.12	2.03	0.04	0.44	2.32	4.15	3.03	0.39	100.00	2.21	
	UT1761-2	74.01	0.15	14.71	1.42	0.03	0.24	1.93	4.28	2.98	0.26	100.00	1.76	
	UT1761-3	75.81	0.18	13.56	1.39	0.03	0.33	1.26	3.73	3.35	0.36	100.00	1.21	
	UT1761-4	75.96	0.16	13.49	1.36	0.06	0.30	1.23	3.76	3.34	0.34	100.00	2.50	
	UT1761-7	72.26	0.25	15.13	1.80	0.10	0.46	2.26	4.46	2.91	0.38	100.00	1.88	
	UT1761-8	72.72	0.22	14.99	1.63	0.06	0.40	2.13	4.36	3.04	0.43	100.00	1.88	
	UT1761-10	72.17	0.23	15.29	1.85	0.02	0.45	2.28	4.30	2.98	0.43	100.00	2.36	
	UT1761-11	75.28	0.11	14.17	1.25	0.05	0.23	1.57	3.94	3.15	0.25	100.00	2.20	
	UT1761-13	75.83	0.21	13.39	1.25	0.06	0.24	1.34	3.85	3.48	0.35	100.00	1.10	
	UT1761-14	72.29	0.22	15.11	1.85	0.08	0.49	2.25	4.25	3.05	0.41	100.00	2.58	
	UT1761-15	72.57	0.21	15.03	1.76	0.06	0.42	2.12	4.34	3.11	0.39	100.00	2.55	
	AVERAGE	73.71	0.21	14.50	1.66	0.06	0.36	1.90	4.09	3.18	0.33	100.00	2.39	
	STDEV	1.28	0.06	0.61	0.25	0.03	0.09	0.37	0.29	0.16	0.05	0.00	1.59	n = 101
WRE	**UA 1042-1**	73.60	0.23	14.52	1.65	0.00	0.47	1.93	4.15	3.19	0.26	100.00	2.10	May-05
	UA 1042-2	75.58	0.20	14.08	1.28	0.06	0.30	1.56	3.05	3.62	0.26	100.00	1.31	
	UA 1042-3	75.20	0.21	13.75	1.24	0.00	0.22	1.55	3.85	3.60	0.38	100.00	2.33	
	UA 1042-4	75.20	0.20	13.64	1.24	0.03	0.26	1.50	3.99	3.61	0.34	100.00	1.61	
	UA 1042-7	74.37	0.11	13.90	1.30	0.05	0.33	1.68	4.31	3.57	0.38	100.00	3.32	
	UA 1042-8	72.98	0.17	15.15	1.66	0.04	0.47	1.87	4.02	3.32	0.33	100.00	5.61	
	UA 1042-9	74.32	0.13	14.07	1.52	0.06	0.37	1.69	4.26	3.25	0.33	100.00	1.49	
	UA 1042-10	74.36	0.18	14.22	1.53	0.01	0.35	1.68	4.06	3.27	0.34	100.00	3.64	
	UA 1042-14	74.31	0.23	14.35	1.43	0.06	0.25	1.61	4.19	3.31	0.25	100.00	2.11	
	UA 1042-15	75.24	0.12	13.86	1.19	0.06	0.23	1.56	3.89	3.49	0.36	100.00	2.25	
	UA 1042-16	74.13	0.14	14.56	1.34	0.09	0.34	1.67	4.06	3.35	0.30	100.00	2.18	
	UA 1042-18	74.36	0.24	13.96	1.59	0.02	0.49	1.65	3.93	3.43	0.34	100.00	2.07	
	UA 1042-19	75.62	0.18	13.30	1.21	0.07	0.11	1.40	4.04	3.72	0.34	100.00	2.45	
	UA 1042-20	75.90	0.12	13.67	1.16	0.05	0.19	1.42	3.36	3.75	0.39	100.00	2.64	
	UA 1042-21	75.41	0.17	13.56	1.10	0.05	0.18	1.47	3.99	3.69	0.38	100.00	1.40	

UA 1042-22	74.94	0.19	14.01	1.32	0.07	0.33	1.64	3.89	3.29	0.31	100.00	2.68	
UA 1042-23	74.94	0.15	13.71	1.25	0.01	0.18	1.56	4.30	3.48	0.42	100.00	1.95	
UA 1042-24	75.20	0.08	13.66	1.11	0.00	0.25	1.61	4.19	3.57	0.34	100.00	2.63	
UA 1042-25	75.23	0.16	13.52	1.22	0.00	0.24	1.57	4.19	3.55	0.33	100.00	3.38	
UA 1043-1	75.83	0.17	13.62	1.03	0.06	0.17	1.37	3.78	3.67	0.30	100.00	1.85	**May-05**
UA 1043-3	74.33	0.16	14.41	1.37	0.11	0.33	1.61	3.92	3.43	0.32	100.00	2.25	
UA 1043-5	75.09	0.18	13.80	1.23	0.07	0.25	1.52	3.96	3.61	0.29	100.00	2.56	
UA 1043-6	74.82	0.15	13.82	1.25	0.05	0.21	1.57	4.10	3.60	0.43	100.00	5.27	
UA 1043-7	74.55	0.11	13.93	1.32	0.05	0.25	1.69	3.98	3.75	0.37	100.00	4.41	
UA 1043-8	73.24	0.18	14.52	1.63	0.03	0.56	1.91	4.18	3.46	0.29	100.00	6.47	
UA 1043-10	74.01	0.19	14.33	1.33	0.05	0.31	1.72	4.06	3.56	0.45	100.00	2.83	
UA 1043-11	74.41	0.11	14.21	1.48	0.03	0.31	1.69	4.07	3.35	0.32	100.00	3.20	
UA 1043-12	75.44	0.06	13.62	1.18	0.03	0.23	1.48	4.11	3.47	0.37	100.00	2.64	
UA 1043-13	75.51	0.11	13.85	1.19	0.11	0.25	1.46	3.69	3.53	0.30	100.00	6.35	
UA 1043-14	74.37	0.13	14.60	1.42	0.12	0.26	1.69	3.40	3.65	0.37	100.00	4.53	
UA 1043-15	74.24	0.19	14.16	1.44	0.13	0.30	1.64	4.15	3.48	0.28	100.00	3.44	
UA 1043-16	75.75	0.05	13.59	1.22	0.00	0.19	1.38	3.89	3.68	0.26	100.00	2.19	
UA 1043-17	74.99	0.13	14.07	1.08	0.07	0.26	1.44	3.98	3.66	0.33	100.00	3.77	
UA 1043-18	75.23	0.13	13.69	1.21	0.05	0.24	1.45	3.94	3.73	0.32	100.00	2.86	
UA 1043-19	75.13	0.19	13.62	1.13	0.08	0.27	1.57	4.04	3.62	0.36	100.00	2.73	
UA 1043-20	74.89	0.07	13.96	1.17	0.05	0.24	1.49	4.15	3.63	0.34	100.00	3.16	
UA 1043-21	74.95	0.17	13.93	1.26	0.05	0.24	1.55	3.87	3.64	0.33	100.00	3.97	
UA 1043-22	75.44	0.12	13.67	1.18	0.04	0.23	1.59	3.83	3.57	0.35	100.00	3.56	
UA 1043-23	73.88	0.17	14.64	1.39	0.10	0.31	1.60	3.91	3.64	0.35	100.00	2.97	
UA 1043-25	74.93	0.15	14.07	1.23	0.03	0.32	1.59	4.06	3.35	0.26	100.00	2.98	
UA1043-1	74.32	0.14	14.43	1.22	0.00	0.28	1.58	4.02	3.65	0.36	100.00	3.15	**Jan 29 2007**
UA1043-2	75.62	0.15	13.70	0.94	0.04	0.18	1.35	3.97	3.65	0.41	100.00	2.12	
UA1043-3	75.21	0.13	13.78	1.08	0.01	0.19	1.42	4.05	3.79	0.32	100.00	2.09	
UA1043-4	75.41	0.09	13.71	1.19	0.02	0.16	1.45	3.99	3.65	0.33	100.00	4.00	
UA1043-5	75.55	0.11	13.81	1.06	0.03	0.19	1.35	3.90	3.65	0.35	100.00	3.39	
UA1043-6	75.87	0.05	13.55	1.12	0.00	0.17	1.39	3.99	3.58	0.28	100.00	3.74	
UA1043-7	74.96	0.13	14.07	1.18	0.06	0.21	1.49	3.93	3.65	0.32	100.00	7.36	
UA1043-8	75.78	0.18	13.77	1.10	0.00	0.20	1.37	3.65	3.65	0.31	100.00	3.54	
UA1043-9	73.63	0.25	14.43	1.55	0.07	0.47	1.68	4.22	3.33	0.37	100.00	3.29	

UA1043-10	75.92	0.01	13.68	1.04	0.06	0.15	1.38	3.80	3.60	0.36	100.00	3.20	
UA1043-11	75.81	0.16	13.56	0.94	0.06	0.19	1.37	3.90	3.72	0.28	100.00	4.33	
UA1043-12	75.26	0.13	13.78	1.17	0.02	0.20	1.54	3.92	3.69	0.30	100.00	2.61	
UA1043-13	75.35	0.17	13.69	1.22	0.03	0.26	1.41	3.98	3.57	0.32	100.00	2.41	
UA1043-14	75.18	0.19	13.96	1.18	0.00	0.22	1.44	3.95	3.56	0.31	100.00	2.77	
UA1043-16	75.28	0.18	13.92	1.09	0.06	0.23	1.45	3.94	3.59	0.27	100.00	2.36	
UA1043-17	75.37	0.11	13.77	1.24	0.06	0.26	1.54	4.00	3.35	0.31	100.00	3.25	
UA1043-18	75.31	0.15	13.73	1.24	0.06	0.28	1.51	4.11	3.23	0.38	100.00	2.90	
UA1043-19	74.83	0.13	14.04	1.20	0.05	0.24	1.53	4.26	3.31	0.40	100.00	3.22	
UA1043-20	76.02	0.12	13.68	1.09	0.06	0.04	1.40	3.83	3.41	0.34	100.00	1.89	
UA 1045-1	75.49	0.06	13.50	1.14	0.10	0.21	1.52	4.04	3.62	0.32	100.00	2.39	May-05
UA 1045-2	74.48	0.19	14.07	1.47	0.00	0.41	1.70	4.11	3.23	0.33	100.00	2.58	
UA 1045-3	74.74	0.14	14.07	1.33	0.04	0.34	1.66	3.98	3.38	0.31	100.00	2.51	
UA 1045-4	73.98	0.25	14.17	1.47	0.06	0.28	1.76	4.26	3.46	0.30	100.00	2.13	
UA 1045-5	74.90	0.14	13.83	1.48	0.06	0.21	1.64	4.10	3.29	0.34	100.00	2.84	
UA 1045-6	74.91	0.14	13.92	1.36	0.04	0.27	1.62	4.16	3.25	0.34	100.00	1.90	
UA 1045-7	75.70	0.13	13.41	1.15	0.08	0.20	1.47	3.89	3.66	0.32	100.00	2.39	
UA 1045-8	75.47	0.11	13.59	1.16	0.07	0.19	1.49	3.94	3.67	0.30	100.00	1.75	
UA 1045-9	75.25	0.14	13.58	1.22	0.00	0.22	1.53	4.12	3.66	0.28	100.00	2.78	
UA 1045-11	75.17	0.13	13.63	1.17	0.05	0.21	1.52	4.14	3.61	0.37	100.00	1.99	
UA 1045-12	74.50	0.14	14.21	1.38	0.03	0.36	1.69	3.93	3.43	0.33	100.00	1.63	
UA 1045-13	74.44	0.11	13.94	1.46	0.06	0.41	1.79	4.07	3.38	0.34	100.00	1.81	
UA 1045-14	74.61	0.19	14.17	1.26	0.04	0.35	1.67	3.99	3.39	0.33	100.00	1.81	
UA 1045-15	73.71	0.24	14.33	1.61	0.02	0.44	1.83	4.26	3.22	0.33	100.00	1.17	
UA 1045-16	73.89	0.16	14.37	1.62	0.06	0.46	1.83	4.00	3.26	0.34	100.00	1.59	
UA 1045-17	73.64	0.18	14.39	1.69	0.05	0.42	1.79	4.19	3.34	0.31	100.00	1.67	
UA 1045-19	75.31	0.10	13.63	1.30	0.08	0.20	1.49	4.04	3.55	0.30	100.00	0.79	
UA 1045-20	75.51	0.18	13.80	1.29	0.05	0.23	1.42	3.72	3.44	0.36	100.00	0.99	
UA 1045-21	75.56	0.18	13.06	1.24	0.00	0.23	1.67	3.83	3.92	0.32	100.00	7.49	
UA 1045-22	75.62	0.14	13.35	1.30	0.09	0.21	1.48	3.92	3.59	0.30	100.00	1.32	
UA 1045-23	75.57	0.14	13.59	1.26	0.06	0.23	1.46	3.80	3.61	0.29	100.00	1.08	
UA 1045-24	75.29	0.11	13.79	1.26	0.06	0.28	1.60	3.81	3.46	0.34	100.00	0.33	
UA 1045-25	75.81	0.05	13.49	1.25	0.06	0.23	1.50	3.65	3.63	0.33	100.00	1.64	
UA1045-1	73.95	0.13	14.59	1.51	0.07	0.30	1.74	4.32	3.06	0.33	100.00	-0.07	Oct-05

UA1045-2	73.80	0.17	14.47	1.53	0.06	0.34	1.70	4.16	3.41	0.35	100.00	6.27	
UA1045-3	75.71	0.14	13.63	1.12	0.06	0.16	1.39	3.89	3.63	0.28	100.00	1.51	
UA1045-4	75.98	0.12	13.53	1.14	0.00	0.19	1.43	3.79	3.50	0.33	100.00	1.81	
UA1045-5	75.57	0.13	13.51	1.19	0.07	0.17	1.41	3.99	3.64	0.32	100.00	1.98	
UA1045-6	76.05	0.06	13.53	1.11	0.10	0.16	1.40	3.82	3.44	0.33	100.00	0.87	
UA1045-8	74.07	0.25	14.33	1.81	0.07	0.29	1.75	4.01	3.04	0.38	100.00	-1.84	
UA1045-Oct9	75.52	0.10	13.59	1.29	0.09	0.20	1.40	4.00	3.46	0.35	100.00	-0.01	
UA1045-Oct10	75.25	0.15	13.93	1.19	0.04	0.21	1.44	3.96	3.51	0.33	100.00	1.31	
UA1045-Oct11	75.24	0.16	13.96	1.21	0.08	0.20	1.51	4.04	3.27	0.33	100.00	0.43	
UA1045-Oct12	75.55	0.11	13.65	1.00	0.04	0.17	1.39	4.00	3.69	0.38	100.00	1.86	
UA1045-Oct13	75.89	0.16	13.52	1.09	0.07	0.18	1.39	3.83	3.55	0.32	100.00	1.13	
UA1045-Oct14	75.19	0.13	13.70	1.42	0.06	0.22	1.54	3.88	3.50	0.36	100.00	1.28	
UA1045-16	75.59	0.25	13.64	1.24	0.07	0.20	1.52	3.73	3.43	0.33	100.00	0.99	
UA1045-18	75.46	0.16	13.65	1.24	0.08	0.22	1.50	3.85	3.55	0.29	100.00	1.22	
UA1045-19	75.56	0.19	13.44	1.21	0.07	0.21	1.41	3.89	3.71	0.30	100.00	1.92	
UA1045-20	74.84	0.17	14.02	1.26	0.04	0.25	1.64	4.05	3.39	0.35	100.00	1.45	
UA1121-1	75.00	0.19	13.72	1.30	0.05	0.27	1.66	3.93	3.43	0.45	100.00	2.87	May-05
UA1121-2	74.90	0.16	14.00	1.34	0.02	0.21	1.50	3.82	3.67	0.37	100.00	3.32	
UA1121-3	74.81	0.13	14.11	1.27	0.06	0.24	1.50	4.05	3.50	0.34	100.00	3.91	
UA1121-4	73.58	0.22	14.59	1.69	0.06	0.39	1.84	4.24	3.09	0.32	100.00	2.31	
UA1121-5	74.59	0.24	14.01	1.43	0.06	0.28	1.73	3.82	3.45	0.38	100.00	6.09	
UA1121-6	75.04	0.13	14.18	1.35	0.05	0.23	1.54	3.83	3.36	0.30	100.00	2.68	
UA1121-7	75.00	0.14	13.97	1.33	0.02	0.24	1.56	3.98	3.42	0.36	100.00	2.28	
UA1121-8	75.09	0.14	13.89	1.29	0.06	0.18	1.55	3.87	3.58	0.35	100.00	2.50	
UA1121-9	74.60	0.15	14.36	1.50	0.07	0.28	1.60	3.92	3.16	0.35	100.00	3.61	
UA1121-10	74.21	0.18	14.35	1.43	0.06	0.29	1.75	4.11	3.23	0.36	100.00	3.01	
UA1121-11	74.80	0.14	14.17	1.18	0.07	0.17	1.42	4.02	3.60	0.42	100.00	5.09	
UA1121-12	75.49	0.12	13.62	1.19	0.10	0.21	1.50	3.94	3.54	0.27	100.00	3.47	
UA1121-13	75.41	0.13	13.74	1.18	0.02	0.24	1.51	3.78	3.68	0.31	100.00	1.11	
UA1121-14	75.36	0.14	13.83	1.23	0.02	0.21	1.46	3.92	3.49	0.33	100.00	2.06	
UA1121-18	74.71	0.19	14.13	1.40	0.00	0.19	1.67	3.68	3.68	0.35	100.00	5.21	
UA1121-19	74.72	0.11	14.09	1.37	0.06	0.26	1.57	3.94	3.50	0.36	100.00	0.89	
UA1121-20	75.02	0.07	13.83	1.35	0.08	0.28	1.66	3.68	3.65	0.39	100.00	2.06	
UA1121-21	75.18	0.14	13.79	1.23	0.06	0.16	1.54	4.04	3.54	0.33	100.00	2.29	

UA1121-22	75.01	0.24	13.81	1.36	0.01	0.21	1.62	4.01	3.46	0.27	100.00	2.94	
UA1121-23	74.99	0.22	13.91	1.35	0.04	0.25	1.48	4.06	3.36	0.33	100.00	2.19	
UA1121-24	75.28	0.15	13.74	1.28	0.04	0.19	1.52	3.87	3.50	0.42	100.00	2.70	
UA1121-25	75.93	0.09	13.32	1.04	0.03	0.12	1.36	4.08	3.67	0.37	100.00	4.25	
UA1121-26	75.21	0.18	14.41	1.01	0.05	0.17	1.36	3.78	3.56	0.28	100.00	3.23	
UA1121-27	75.97	0.13	13.38	1.20	0.02	0.14	1.41	3.78	3.64	0.32	100.00	1.40	
UA1121-28	73.97	0.17	14.56	1.66	0.08	0.30	1.87	3.65	3.40	0.34	100.00	1.00	
UA1120-1	76.02	0.05	13.58	1.11	0.03	0.22	1.35	3.71	3.63	0.31	100.00	1.64	May-05
UA1120-2	75.65	0.16	13.59	1.15	0.05	0.20	1.35	4.04	3.49	0.30	100.00	1.09	
UA1120-3	75.48	0.18	13.71	1.19	0.10	0.21	1.51	3.86	3.45	0.32	100.00	1.76	
UA1120-4	75.13	0.16	14.12	1.23	0.04	0.18	1.48	3.93	3.37	0.35	100.00	2.06	
UA1120-5	75.51	0.13	13.64	1.16	0.04	0.20	1.46	3.94	3.58	0.32	100.00	1.93	
UA1120-6	75.21	0.16	13.93	1.29	0.02	0.18	1.53	3.81	3.52	0.36	100.00	1.77	
UA1120-7	75.17	0.17	13.94	1.22	0.08	0.17	1.51	3.81	3.[illegible]	0.36	100.00	3.42	
UA1120-8	75.96	0.21	13.30	1.07	-0.05	0.14	1.40	3.88	3.69	0.28	100.00	1.72	
UA1120-10	74.53	0.18	14.07	1.39	0.02	0.31	1.69	4.23	3.26	0.31	100.00	1.66	
UA1120-11	75.56	0.11	13.60	1.15	0.05	0.18	1.58	3.92	3.48	0.37	100.00	3.94	
UA1120-12	75.55	0.06	13.80	1.19	0.08	0.15	1.43	3.81	3.55	0.39	100.00	1.63	
UA1120-13	74.88	0.19	14.12	1.27	0.02	0.19	1.65	3.89	3.48	0.31	100.00	1.88	
UA1120-14	75.08	0.21	13.85	1.28	0.08	0.22	1.60	3.97	3.40	0.32	100.00	2.18	
UA1120-15	75.68	0.13	13.75	1.12	0.01	0.18	1.36	3.82	3.67	0.28	100.00	2.11	
UA1120-16	75.30	0.10	14.07	1.11	0.07	0.17	1.38	3.93	3.49	0.36	100.00	2.64	
UA1120-17	75.80	0.10	13.47	1.12	0.08	0.20	1.43	3.96	3.50	0.34	100.00	2.29	
UA1120-18	75.19	0.15	13.64	1.28	0.07	0.19	1.54	4.09	3.47	0.38	100.00	2.07	
UA1120-19	75.68	0.09	13.61	1.25	0.04	0.15	1.38	3.92	3.58	0.31	100.00	2.89	
UA1120-20	75.14	0.16	13.87	1.30	0.00	0.23	1.54	4.00	3.48	0.29	100.00	2.52	
UA1120-21	75.34	0.14	13.56	1.22	0.03	0.22	1.57	3.98	3.61	0.34	100.00	2.16	
UA1120-22	73.91	0.09	15.04	1.52	0.03	0.32	1.68	3.87	3.26	0.27	100.00	2.53	
UA1120-23	75.70	0.14	13.54	1.23	0.01	0.21	1.45	3.86	3.55	0.31	100.00	2.97	
UA1120-24	75.30	0.16	13.52	1.22	0.05	0.21	1.49	4.03	3.66	0.35	100.00	1.43	
UA1120-25	75.58	0.10	13.62	1.34	0.08	0.18	1.44	3.80	3.63	0.25	100.00	1.90	
UT 2006-3	74.83	0.14	13.94	1.29	0.01	0.26	1.64	3.98	3.53	0.39	100.00	1.89	May-05
UT 2006-4	75.67	0.08	13.50	1.22	0.08	0.23	1.57	3.87	3.37	0.41	100.00	1.25	
UT 2006-5	75.73	0.19	13.39	1.24	0.08	0.23	1.57	3.74	3.54	0.29	100.00	0.47	

UT 2006-6	75.08	0.16	13.56	1.33	0.09	0.23	1.66	4.03	3.48	0.38	100.00	0.56	
UT 2006-7	74.87	0.15	13.73	1.24	0.10	0.27	1.52	4.09	3.63	0.41	100.00	1.73	
UT 2006-8	73.69	0.25	14.21	1.73	0.04	0.38	2.03	4.20	3.12	0.35	100.00	1.77	
UT 2006-10	75.22	0.16	13.66	1.22	0.07	0.21	1.59	3.98	3.57	0.31	100.00	1.74	
UT 2006-11	75.02	0.20	13.64	1.42	0.00	0.29	1.56	4.15	3.43	0.29	100.00	0.95	
UT 2006-12	75.13	0.11	14.14	1.16	0.09	0.25	1.51	3.87	3.48	0.25	100.00	3.10	
UT 2006-13	75.53	0.10	13.45	1.28	0.11	0.27	1.60	3.94	3.43	0.28	100.00	2.89	
UT 2006-15	76.05	0.17	13.28	1.11	0.00	0.21	1.46	3.81	3.59	0.32	100.00	3.33	
UT 2006-16	75.28	0.10	13.53	1.28	0.07	0.22	1.58	4.02	3.60	0.32	100.00	1.26	
UT 2006-17	73.67	0.20	14.41	1.69	0.05	0.44	1.96	4.15	3.09	0.33	100.00	0.72	
UT 2006-18	76.14	0.19	13.07	1.04	0.06	0.17	1.32	3.92	3.76	0.33	100.00	2.39	
UT 2006-20	75.41	0.15	13.76	1.21	0.04	0.30	1.56	3.92	3.30	0.35	100.00	2.11	
UT 2006-21	74.93	0.23	13.78	1.43	0.05	0.32	1.66	3.87	3.41	0.33	100.00	9.01	
UT 2006-22	73.55	0.23	14.24	1.77	0.06	0.43	2.03	4.15	3.16	0.38	100.00	0.26	
UA1119-1	73.48	0.26	14.71	1.79	0.04	0.34	1.91	4.08	3.03	0.35	100.00	0.71	Oct-05
UA1119-2	73.61	0.21	14.73	1.67	0.06	0.31	1.96	4.00	3.11	0.33	100.00	2.85	
UA1119-3	73.80	0.24	14.28	1.80	0.10	0.37	2.07	3.96	3.11	0.28	100.00	5.61	
UA1119-4	73.55	0.28	14.44	1.74	0.10	0.39	1.90	4.19	3.07	0.34	100.00	1.65	
UA1119-5	73.52	0.22	14.44	1.70	0.09	0.42	1.87	4.24	3.17	0.32	100.00	1.19	
UA1119-6	73.30	0.22	14.83	1.71	0.05	0.40	2.08	4.05	3.04	0.31	100.00	2.22	
UA1119-8	73.70	0.24	14.52	1.75	0.06	0.32	1.95	4.13	2.96	0.38	100.00	0.82	
UA1119-9	73.67	0.19	14.55	1.70	0.06	0.34	1.95	4.03	3.17	0.33	100.00	1.68	
UA1119-11	73.34	0.23	14.53	1.88	0.01	0.35	2.01	4.23	3.09	0.34	100.00	1.79	
UA1119-13	73.85	0.20	14.41	1.69	0.06	0.36	1.97	4.04	3.11	0.31	100.00	2.85	
UA1119-14	73.37	0.21	14.73	1.76	0.10	0.32	1.94	4.07	3.15	0.36	100.00	6.84	
UA1119-15	73.50	0.22	14.69	1.71	0.08	0.38	2.03	4.04	3.02	0.34	100.00	1.04	
UA1119-16	73.46	0.21	14.52	1.79	0.04	0.38	1.91	4.32	3.10	0.28	100.00	3.58	
UA1119-17	73.54	0.15	14.80	1.63	0.02	0.36	2.02	3.93	3.26	0.30	100.00	2.74	
UA1119-18	73.49	0.24	14.59	1.70	0.04	0.34	2.04	4.18	3.06	0.32	100.00	4.99	
UA1119-19	73.22	0.23	14.79	1.70	0.07	0.37	2.01	4.18	3.11	0.32	100.00	1.21	
UA1119-20	73.34	0.18	14.36	1.98	0.05	0.41	2.06	4.08	3.23	0.31	100.00	1.53	
UA1119-1	73.82	0.23	14.45	1.62	0.00	0.39	1.89	4.06	3.21	0.33	100.00	1.89	Dec-05
UA1119-2	73.83	0.20	14.45	1.61	0.05	0.35	1.94	4.12	3.12	0.34	100.00	3.18	
UA1119-3	73.79	0.20	14.51	1.67	0.05	0.35	1.90	3.88	3.31	0.35	100.00	0.75	

UA1119-4	73.61	0.20	14.63	1.61	0.03	0.41	1.87	4.13	3.16	0.35	100.00	2.28	
UA1119-5	74.43	0.19	14.01	1.32	0.05	0.27	1.70	4.17	3.49	0.37	100.00	4.81	
UA1119-6	74.25	0.19	14.06	1.37	0.05	0.32	1.66	4.18	3.55	0.36	100.00	3.57	
UA1119-7	74.61	0.13	14.30	1.35	0.03	0.30	1.61	4.07	3.32	0.29	100.00	4.07	
UA1119-8	74.57	0.18	14.07	1.25	0.09	0.22	1.58	4.14	3.40	0.48	100.00	2.82	
UA1119-9	74.10	0.22	14.36	1.60	0.03	0.41	1.85	3.97	3.16	0.31	100.00	2.82	
UA1119-12	74.32	0.17	14.31	1.36	0.07	0.32	1.65	4.10	3.30	0.40	100.00	4.05	
UA1119-14	74.53	0.13	14.26	1.29	0.03	0.33	1.56	4.30	3.23	0.35	100.00	-0.36	
UA1119-15	74.27	0.23	14.18	1.36	0.09	0.31	1.73	4.27	3.20	0.36	100.00	2.79	
UA1247-2	73.78	0.19	14.54	1.59	0.07	0.42	1.83	4.07	3.19	0.32	100.00	3.15	Jan. 29 2007
UA1247-3	73.25	0.24	14.79	1.61	0.05	0.36	2.06	4.13	3.17	0.36	100.00	2.64	
UA1248-1	74.24	0.23	14.14	1.51	0.01	0.36	1.87	4.09	3.23	0.33	100.00	2.42	Jan. 29 2007
UA1248-3	73.67	0.23	14.65	1.54	0.04	0.36	1.83	4.18	3.12	0.37	100.00	1.36	
UA1248-5	75.87	0.15	13.55	1.12	0.08	0.16	1.39	3.87	3.52	0.31	100.00	2.79	
UA1248-6	75.15	0.17	13.96	1.18	0.05	0.21	1.44	3.96	3.53	0.34	100.00	5.78	
UA1248-7	73.77	0.24	14.44	1.50	0.07	0.41	1.99	4.13	3.11	0.33	100.00	0.91	
UA1248-9	75.87	0.07	13.58	1.14	0.06	0.22	1.51	3.60	3.63	0.34	100.00	4.72	
UA1248-10	73.90	0.24	14.60	1.46	0.06	0.37	1.88	4.01	3.13	0.34	100.00	3.93	
UA1248-11	74.04	0.22	14.40	1.47	0.00	0.36	1.93	4.14	3.17	0.27	100.00	3.51	
UA1248-14	73.45	0.21	14.61	1.71	0.06	0.53	2.06	4.08	3.05	0.24	100.00	2.14	
UA1248-15	73.89	0.19	14.63	1.62	0.04	0.41	1.83	3.99	3.05	0.36	100.00	2.05	
UA1248-16	73.50	0.24	14.48	1.54	0.06	0.39	1.96	4.22	3.20	0.41	100.00	1.88	
UA1248-19	73.83	0.24	14.43	1.55	0.00	0.38	1.97	4.17	3.04	0.38	100.00	1.27	
UA1248-20	73.80	0.16	14.53	1.60	0.02	0.41	2.01	4.17	3.01	0.30	100.00	2.18	
UA1248-23	73.91	0.23	14.60	1.60	0.03	0.31	1.92	4.05	2.96	0.39	100.00	2.61	
UA1248-24	74.09	0.26	14.57	1.52	0.09	0.32	1.87	3.94	3.08	0.25	100.00	1.82	
UA1248-25	73.98	0.15	14.44	1.46	0.10	0.36	1.81	4.11	3.27	0.32	100.00	3.97	
UA1249-1	73.94	0.19	14.46	1.47	0.07	0.37	1.99	4.07	3.10	0.34	100.00	2.93	Jan. 29 2007
UA1249-2	74.03	0.19	14.49	1.49	0.05	0.35	1.87	3.92	3.23	0.40	100.00	2.32	
UA1249-3	73.76	0.23	14.44	1.57	0.05	0.36	1.88	4.14	3.31	0.25	100.00	2.40	
UA1249-4	73.55	0.18	14.79	1.56	0.06	0.40	1.84	4.13	3.15	0.34	100.00	1.99	
UA1249-5	73.77	0.23	14.60	1.58	0.03	0.36	1.85	4.18	3.06	0.34	100.00	2.48	
UA1249-9	75.67	0.16	13.68	1.12	0.07	0.22	1.46	3.77	3.45	0.40	100.00	2.23	
UA1249-10	75.81	0.21	13.68	1.10	0.03	0.18	1.39	3.67	3.58	0.36	100.00	2.05	

UA1249-12	74.16	0.21	13.95	1.47	0.00	0.35	1.88	4.24	3.42	0.32	100.00	5.61	
UA1249-13	74.64	0.14	14.19	1.27	0.03	0.27	1.62	4.10	3.42	0.33	100.00	0.39	
UA1249-15	73.62	0.27	14.50	1.57	0.06	0.38	1.94	4.20	3.10	0.36	100.00	2.43	
UA1249-16	73.80	0.21	14.43	1.57	0.04	0.37	1.92	4.22	3.05	0.39	100.00	2.58	
UA1249-17	73.38	0.18	14.78	1.66	0.04	0.38	1.88	4.22	3.12	0.35	100.00	3.12	
UA1249-18	73.70	0.23	14.47	1.63	0.03	0.38	2.01	4.13	3.04	0.37	100.00	2.33	
UA1249-19	75.72	0.14	13.48	1.10	0.04	0.22	1.40	4.09	3.53	0.27	100.00	1.97	
UA1249-20	73.67	0.28	14.49	1.62	0.06	0.40	1.89	4.08	3.07	0.44	100.00	1.65	
UA1249-22	73.80	0.26	14.38	1.51	0.06	0.40	1.89	4.18	3.15	0.36	100.00	1.94	
UA1249-23	73.89	0.20	14.41	1.45	0.08	0.38	1.77	4.33	3.14	0.36	100.00	1.53	
UA1249-25	74.05	0.25	14.41	1.55	0.05	0.40	1.85	4.10	2.98	0.38	100.00	2.34	
UA1251-2	73.43	0.26	14.75	1.64	0.02	0.41	1.91	4.26	2.96	0.36	100.00	2.75	Jan. 29 2007
UA1251-3	73.94	0.20	14.37	1.59	0.08	0.38	1.89	3.89	3.33	0.33	100.00	2.61	
UA1251-4	73.54	0.21	14.69	1.63	0.01	0.40	2.00	3.92	3.25	0.36	100.00	4.17	
UA1251-5	73.80	0.21	14.60	1.63	0.07	0.41	1.98	3.88	3.06	0.37	100.00	2.16	
UA1251-6	73.50	0.20	14.81	1.58	0.02	0.38	1.84	4.10	3.19	0.37	100.00	9.80	
UA1251-7	74.15	0.22	14.44	1.54	0.04	0.40	1.77	4.09	3.07	0.28	100.00	2.49	
UA1251-8	73.54	0.18	14.65	1.56	0.02	0.34	1.98	4.22	3.20	0.31	100.00	2.39	
UA1251-9	73.41	0.20	14.55	1.54	0.06	0.41	1.89	4.49	3.10	0.35	100.00	1.51	
UA1251-10	73.62	0.28	14.61	1.63	0.05	0.39	1.93	4.26	2.92	0.30	100.00	2.39	
UA1251-11	73.76	0.25	14.67	1.64	0.04	0.41	1.93	3.97	3.01	0.32	100.00	1.81	
UA1251-12	73.73	0.10	14.71	1.65	0.03	0.36	1.93	4.05	3.06	0.38	100.00	1.60	
UA1251-14	73.61	0.19	14.67	1.56	0.04	0.41	1.90	4.07	3.15	0.39	100.00	4.75	
UA1251-15	73.62	0.19	14.57	1.72	0.07	0.37	1.94	4.06	3.13	0.33	100.00	2.46	
UA1251-16	73.45	0.21	14.72	1.61	0.05	0.40	1.82	4.36	3.03	0.34	100.00	2.07	
UA1251-17	73.97	0.27	14.68	1.59	0.01	0.35	1.97	3.85	2.90	0.41	100.00	1.94	
UA1251-18	73.72	0.15	14.66	1.63	0.02	0.38	1.90	4.14	3.06	0.33	100.00	4.16	
UA1251-19	73.65	0.22	14.73	1.63	0.04	0.42	1.88	4.06	3.01	0.36	100.00	2.74	
UA1251-20	73.57	0.19	14.70	1.59	0.04	0.39	1.92	4.02	3.19	0.38	100.00	3.16	
UA1252-1	73.96	0.25	14.45	1.51	0.03	0.37	1.78	4.30	3.06	0.29	100.00	2.98	Jan. 29 2007
UA1252-2	73.81	0.24	14.61	1.60	0.04	0.43	1.80	3.99	3.12	0.35	100.00	5.97	
UA1252-5	73.35	0.18	14.66	1.57	0.06	0.40	1.85	4.36	3.25	0.32	100.00	2.49	
UA1252-6	73.37	0.17	14.68	1.59	0.07	0.41	1.95	4.32	3.07	0.38	100.00	4.26	
UA1252-7	73.16	0.24	14.80	1.73	0.06	0.40	1.81	4.29	3.23	0.29	100.00	1.96	

UA1252-8	73.52	0.22	14.74	1.48	0.08	0.37	1.94	4.20	3.13	0.34	100.00	3.91	
UA1252-9	73.12	0.20	14.63	1.67	0.09	0.40	1.93	4.52	3.13	0.32	100.00	0.80	
UA1252-11	73.19	0.26	14.82	1.63	0.04	0.44	1.79	4.15	3.24	0.45	100.00	4.13	
UA1252-12	73.84	0.18	14.64	1.63	0.07	0.36	1.82	3.94	3.23	0.29	100.00	4.27	
UA1252-13	73.43	0.28	14.97	1.49	0.06	0.37	1.85	4.02	3.20	0.32	100.00	2.74	
UA1252-14	73.39	0.25	14.77	1.59	0.07	0.38	1.86	4.31	3.02	0.35	100.00	1.58	
UA1252-15	73.54	0.17	14.64	1.71	0.05	0.42	1.87	4.15	3.07	0.36	100.00	-0.30	
UA1252-17	73.47	0.24	14.45	1.60	0.07	0.44	1.88	4.43	3.07	0.34	100.00	5.44	
UA1252-18	73.85	0.20	14.65	1.53	0.07	0.42	1.80	3.99	3.12	0.36	100.00	2.07	
UA1252-19	73.26	0.22	14.71	1.60	0.09	0.40	2.02	4.31	3.07	0.32	100.00	2.98	
UA1252-20	73.72	0.20	14.77	1.56	0.03	0.39	1.82	4.02	3.13	0.36	100.00	2.97	
UA1253-1	74.01	0.20	14.58	1.39	0.07	0.34	1.86	4.08	3.14	0.31	100.00	2.73	Jan. 29 2007
UA1253-2	73.60	0.27	14.52	1.58	0.02	0.41	1.97	4.29	3.03	0.33	100.00	2.87	
UA1253-3	73.58	0.30	14.71	1.52	0.06	0.37	1.91	4.15	3.09	0.31	100.00	4.18	
UA1253-4	73.37	0.26	14.70	1.67	0.08	0.53	1.89	4.13	3.01	0.36	100.00	1.11	
UA1253-6	73.13	0.23	14.94	1.63	0.07	0.41	1.94	4.20	3.09	0.37	100.00	2.87	
UA1253-7	73.14	0.27	14.91	1.60	0.05	0.39	1.94	4.08	3.20	0.42	100.00	2.21	
UA1253-8	73.25	0.17	15.07	1.63	0.01	0.40	1.85	4.17	3.17	0.28	100.00	3.27	
UA1253-9	75.67	0.12	13.63	1.11	0.02	0.14	1.40	4.03	3.56	0.33	100.00	2.45	
UA1253-10	75.76	0.16	13.69	1.05	0.05	0.18	1.34	3.95	3.51	0.30	100.00	1.88	
UA1253-11	73.75	0.18	14.56	1.62	0.05	0.42	1.89	4.19	3.00	0.34	100.00	2.49	
UA1254-1	73.28	0.26	14.53	1.57	0.05	0.44	1.92	4.37	3.21	0.37	100.00	2.02	Jan. 29 2007
UA1254-2	73.85	0.26	14.65	1.36	0.07	0,31	1.64	4.30	3.26	0.32	100.00	2.40	
UA1254-3	73.67	0.21	14.49	1.59	0.00	0.37	1.93	4.26	3.11	0.38	100.00	2.37	
UA1254-4	73.58	0.23	14.66	1.48	0.03	0.38	1.84	4.29	3.21	0.31	100.00	2.46	
UA1254-5	73.19	0.25	14.81	1.58	0.09	0.43	1.88	4.15	3.26	0.36	100.00	2.98	
UA1254-6	73.52	0.22	14.74	1.54	0.04	0.40	1.86	4.20	3.16	0.30	100.00	2.52	
UA1254-7	73.51	0.20	14.72	1.61	0.01	0.38	1.92	4.38	2.98	0.31	100.00	1.50	
UA1254-8	73.43	0.21	14.85	1.64	0.03	0.41	1.85	4.07	3.15	0.37	100.00	4.04	
UA1254-9	73.84	0.28	14.71	1.43	0.04	0.47	1.71	4.03	3.15	0.35	100.00	1.46	
UA1254-10	74.11	0.16	14.55	1.47	0.06	0.32	1.70	4.03	3.20	0.42	100.00	1.00	
UA1254-11	73.99	0.16	14.49	1.47	0.08	0.34	1.65	4.20	3.31	0.31	100.00	2.85	
UA1254-12	73.16	0.21	15.14	1.49	0.02	0.42	1.95	4.19	3.08	0.34	100.00	2.79	
UA1254-13	73.38	0.19	14.72	1.61	0.04	0.42	1.95	4.17	3.18	0.33	100.00	2.56	

UA1254-14	73.40	0.20	14.74	1.47	0.07	0.39	1.92	4.38	3.09	0.34	100.00	1.64	
UA1254-15	73.55	0.23	14.65	1.54	0.07	0.41	1.85	4.22	3.14	0.33	100.00	1.01	
AVERAGE	74.52	0.18	14.15	1.40	0.05	0.30	1.68	4.03	3.36	0.34	100.00	2.57	
STDEV	0.88	0.05	0.46	0,21	0,03	0.10	0.21	0.18	0.23	0.04	0.00	1.43	n = 289

6.2. Original Fe-Ti oxide

ILM = Ilmenite (<50% FeO_t)
FI = Ferrian ilmenite (90% > 50% FeO_t)

TM = Titanomagnetite (90% > 50% FeO_t)
MAG = Magnetite (FeO_t>90%; <1% TiO_2)

'bad' = poor total

Name	Species	Sample	FeO_t	TiO_2	Al_2O_3	MgO	MnO	V_2O_3	Cr_2O_3	SiO_2	Total	Date probed
CR	ILM	UT1878fs-8	44.49	53.48	0.01	0.44	2.08	0.20	0.00	0.06	100.80	Oct. 31 2006
	ILM	UT1878fs-9	44.75	53.40	0.03	0.43	2.02	0.23	0.00	0.07	100.99	
	ILM	UT1878fs-10	44.65	53.37	0.03	0.46	2.05	0.20	0.00	0.05	100.84	
	ILM	UT1878fs-14	46.31	53.16	0.05	0.05	1.64	0.22	0.04	0.04	101.53	
	ILM	UT1878fs-15	45.51	53.14	0.02	0.05	1.63	0.24	0.03	0.07	100.72	
	ILM	UT1878fs-17	43.91	52.27	0.04	0.04	2.68	0.20	0.00	0.06	99.23	
		AVERAGE	44.94	53.13	0.03	0.24	2.01	0.21	0.01	0.06	100.68	
		STDEV	0.85	0.44	0.01	0.22	0.38	0.02	0.02	0.01	0.77	
	ILM	UT1878fs-5	44.90	49.14	0.11	3.38	0.59	0.27	0.03	0.07	98.50	
	ILM	UT1878fs-6	45.46	49.21	0.09	3.17	0.56	0.28	0.00	0.09	98.86	
	ILM	UT1878fs-12	46.31	51.28	0.02	0.03	1.90	0.28	0.01	0.08	99.93	
	ILM	UA1059-8	44.31	49.18	0.06	0.86	0.73	0.08	0.00	0.08	95.44	Apr. 26 2006
	ILM	UA1069-4	44.34	49.66	0.11	2.41	0.51	0.11	0.03	0.05	97.28	
		AVERAGE	45.06	49.69	0.08	1.97	0.86	0.20	0.01	0.07	98.00	
		STDEV	0.84	0.91	0.04	1.47	0.59	0.10	0.01	0.02	1.72	
	ILM	UA1069-6	47.88	46.09	0.05	1.40	0.74	0.15	0.01	0.15	96.62	Apr. 26 2006
	ILM	UA1069-7	47.11	47.30	0.12	2.78	0.71	0.07	0.00	0.03	98.13	
	ILM	UT1878fs-1	48.85	47.46	0.11	1.80	0.49	0.64	0.00	0.05	99.46	Oct. 31 2006
	ILM	UT1878fs-2	48.86	47.24	0.09	2.00	0.48	0.62	0.04	0.06	99.42	
		AVERAGE	48.18	47.02	0.09	1.99	0.60	0.37	0.01	0.07	98.41	
		STDEV	0.85	0.63	0.03	0.58	0.14	0.30	0.02	0.05	1.34	
	FI	UT1878fs-11	51.02	46.84	0.03	0.03	1.41	0.27	0.02	0.05	99.71	Oct. 31 2006
	FI	UT1878fs-13	51.41	45.85	0.04	0.05	1.42	0.29	0.00	0.05	99.14	
		AVERAGE	51.21	46.35	0.03	0.04	1.41	0.28	0.01	0.05	99.43	
		STDEV	0.28	0.70	0.01	0.01	0.00	0.01	0.01	0.00	0.41	
	FI	UT1878fs-16	63.18	29.42	0.58	1.29	0.22	0.22	0.02	0.10	95.05	
	FI	UA1069-5	63.69	27.69	0.71	1.47	0.15	0.32	0.04	0.11	94.28	Apr. 26 2006
	FI	UA1069-10	64.30	28.54	0.60	1.49	0.19	0.33	0.01	0.06	95.56	

FI		**UA1069-11**	64.54	27.98	0.63	1.40	0.15	0.38	0.04	0.05	95.25	
		AVERAGE	63.93	28.41	0.63	1.41	0.18	0.31	0.03	0.08	95.03	
		STDEV	0.61	0.76	0.06	0.09	0.03	0.07	0.01	0.03	0.54	
	TM	**UT1878hm-3**	82.45	6.00	2.22	1.51	0.35	0.45	0.19	0.14	93.41	Oct. 31 2006
	TM	**UT1878hm-4**	83.38	5.82	2.37	1.66	0.37	0.45	0.18	0.10	94.39	
	TM bad	**UT1878hm-5**	79.54	6.23	1.61	1.23	0.38	0.53	0.30	0.25	90.13	
	TM bad	**UT1878hm-6**	80.51	6.24	1.84	1.41	0.38	0.53	0.34	0.26	91.58	
	TM	**UT1887hm-8**	83.08	5.53	3.32	1.88	0.47	0.17	0.03	0.18	94.80	
	TM bad	**UT1887hm-9**	81.76	5.60	2.72	1.56	0.49	0.15	0.01	0.11	92.56	
		AVERAGE	81.79	5.90	2.35	1.54	0.41	0.38	0.17	0.17	92.81	
		STDEV	1.51	0.30	0.62	0.22	0.06	0.17	0.14	0.07	1.76	
GI	TM	**UA1242fs-2**	74.31	13.93	2.53	2.71	0.53	0.59	0.06	0.20	94.93	Oct. 31 2006
(ref)	TM	**UA1242fs-10**	74.45	13.64	2.74	2.92	0.58	0.63	0.06	0.13	95.24	
	TM	**UA1242hm-10**	73.32	14.33	2.72	2.92	0.51	0.63	0.04	0.17	94.70	
	TM	**UA1242hm-11**	75.78	14.33	2.73	2.94	0.52	0.59	0.20	0.15	97.33	
	TM	**UA1242hm-12**	75.74	13.04	2.84	3.00	0.48	0.63	0.10	0.16	96.08	
	TM	**UA1242hm-17**	74.86	14.17	2.72	2.82	0.51	0.64	0.08	0.17	96.03	
		AVERAGE	74.74	13.91	2.71	2.88	0.52	0.62	0.09	0.16	95.72	
		STDEV	0.93	0.50	0.10	0.10	0.03	0.02	0.06	0.02	0.97	
	TM	**UA1242fs-5**	76.03	11.19	3.34	3.14	0.39	0.74	0.11	0.20	95.22	
	TM	**UA1242fs-6**	77.33	11.09	3.42	3.16	0.42	0.75	0.10	0.19	96.51	
	TM	**UA1242fs-8**	76.54	11.77	3.23	3.19	0.44	0.79	0.11	0.16	96.31	
	TM	**UA1242fs-9**	76.56	11.73	3.27	3.14	0.43	0.79	0.15	0.15	96.29	
	TM	**UA1242hm-3**	76.93	11.02	3.61	3.59	0.40	0.85	0.19	0.14	96.75	
	TM	**UA1242hm-4**	76.55	10.99	3.51	3.58	0.43	0.85	0.20	0.14	96.28	
	TM	**UA1242hm-6**	75.59	11.32	3.44	3.29	0.42	0.74	0.12	0.16	95.17	
		AVERAGE	76.50	11.30	3.40	3.30	0.42	0.78	0.14	0.16	96.08	
		STDEV	0.57	0.33	0.13	0.20	0.02	0.05	0.04	0.02	0.62	
	TM	**UA1242fs-4**	73.20	17.74	1.99	1.93	0.63	0.40	0.04	0.18	96.21	
	TM	**UA1242fs-7**	72.07	17.32	1.82	1.82	0.67	0.40	0.02	0.23	94.47	
	TM	**UA1242fs-11**	73.86	17.83	1.93	2.08	0.67	0.44	0.02	0.16	97.12	
	TM	**UA1242fs-12**	74.51	17.96	1.90	1.97	0.66	0.46	0.02	0.14	97.77	
	TM	**UA1242fs-13**	73.31	17.93	1.88	1.96	0.64	0.43	0.05	0.14	96.44	

	TM	**UA1242fs-14**	73.26	18.23	2.01	2.01	0.63	0.43	0.07	0.12	96.89	
	TM-bad	**UA1242fs-15**	71.20	17.43	1.95	2.00	0.70	0.42	0.00	0.31	94.11	
	TM	**UA1242fs-16**	73.78	17.93	2.04	2.05	0.65	0.44	0.03	0.11	97.13	
	TM-bad	**UA1242fs-17**	70.36	18.74	2.07	1.96	0.66	0.42	0.01	0.13	94.45	
	TM	**UA1242fs-18**	74.61	18.04	1.88	2.02	0.67	0.42	0.05	0.13	97.91	
	TM	**UA1242fs-19**	74.83	17.69	2.05	2.15	0.63	0.44	0.01	0.14	98.04	
	TM	**UA1242fs-20**	73.83	17.74	1.99	2.09	0.68	0.44	0.01	0.17	97.04	
	TM	**UA1242hm-1**	73.54	17.77	1.99	2.03	0.68	0.43	0.03	0.13	96.70	
	TM	**UA1242hm-2**	74.23	17.66	1.95	2.00	0.65	0.45	0.06	0.19	97.28	
	TM	**UA1242hm-5**	74.16	18.47	1.96	1.95	0.66	0.44	0.05	0.13	97.93	
	TM	**UA1242hm-7**	74.29	17.78	1.93	1.97	0.66	0.46	0.03	0.19	97.40	
	TM	**UA1242hm-9**	74.38	17.54	1.99	2.09	0.65	0.43	0.01	0.15	97.32	
	TM-bad	**UA1242hm-13**	71.07	18.31	2.09	1.96	0.59	0.47	0.00	0.13	94.71	
	TM	**UA1242hm-14**	72.29	18.99	1.96	1.93	0.64	0.48	0.02	0.12	96.55	
	TM	**UA1242hm-15**	73.76	17.71	2.00	2.09	0.67	0.44	0.02	0.15	96.94	
	TM	**UA1242hm-16**	73.85	17.82	1.97	1.87	0.65	0.40	0.02	0.16	96.84	
		AVERAGE	73.35	17.93	1.97	2.00	0.65	0.43	0.03	0.16	96.63	
		STDEV	1.25	0.41	0.06	0.08	0.02	0.02	0.02	0.05	1.20	
GI	TM	**UT1872fs-1**	72.64	17.44	2.05	1.96	0.67	0.42	0.02	0.21	95.53	Oct. 31 2006
(new)	TM	**UT1872fs-2**	72.77	17.42	1.87	1.94	0.65	0.40	0.04	0.21	95.41	
	TM	**UT1872fs-6**	72.21	17.44	1.99	1.97	0.64	0.38	0.04	0.26	95.03	
	TM	**UT1872fs-8**	73.14	17.07	1.98	2.04	0.67	0.40	0.00	0.18	95.61	
	TM	**UT1872fs-9**	73.45	17.31	1.96	1.99	0.63	0.41	0.03	0.18	96.08	
	TM	**UT1872fs-10**	72.76	17.21	2.03	2.09	0.64	0.42	0.01	0.18	95.43	
	TM	**UT1872fs-11**	73.55	17.74	1.99	2.01	0.68	0.46	0.04	0.14	96.73	
	TM	**UT1872fs-12**	73.31	17.66	2.01	2.00	0.67	0.45	0.03	0.17	96.40	
	TM	**UT1872fs-13**	72.78	17.44	1.98	1.98	0.69	0.41	0.03	0.15	95.56	
	TM	**UT1872fs-14**	73.23	17.84	1.93	2.03	0.66	0.44	0.04	0.14	96.43	
	TM	**UT1872fs-15**	72.96	17.75	2.05	2.07	0.66	0.44	0.00	0.16	96.20	
	TM	**UT1872fs-16**	74.47	17.94	1.97	1.97	0.66	0.43	0.01	0.16	97.69	
	TM	**UT1872fs-18**	70.95	18.26	2.53	2.82	0.36	1.27	0.42	0.15	96.80	
	TM	**UT1872hm-1**	73.96	17.93	2.00	2.08	0.66	0.43	0.03	0.15	97.35	
	TM	**UT1872hm-2**	74.01	18.10	1.96	2.01	0.68	0.44	0.04	0.15	97.50	

	TM	**UT1872hm-5**	72.86	17.93	2.03	2.03	0.67	0.42	0.04	0.14	96.22	
	TM	**UT1872hm-6**	74.64	17.84	1.94	1.99	0.67	0.42	0.04	0.17	97.80	
	TM	**UT1872hm-9**	72.58	18.16	1.89	1.93	0.66	0.46	0.01	0.14	95.95	
	TM	**UT1872hm-10**	73.11	18.11	1.96	1.96	0.67	0.43	0.02	0.14	96.52	
	TM	**UT1872hm-11**	72.21	18.39	2.10	1.92	0.61	0.45	0.13	0.18	96.06	
	TM	**UT1872hm-12**	73.46	18.08	1.96	2.02	0.65	0.43	0.03	0.15	96.86	
	TM bad	**UT1872hm-13**	72.09	17.34	1.92	1.96	0.66	0.36	0.00	0.22	94.66	
	TM	**UT1872hm-15**	71.93	18.31	1.94	1.94	0.66	0.41	0.07	0.14	95.51	
	TM	**UT1872hm-16**	73.89	17.92	1.99	2.06	0.67	0.45	0.00	0.12	97.22	
	TM	**UT1872hm-17**	71.96	18.06	2.01	2.03	0.66	0.41	0.03	0.11	95.39	
		AVERAGE	73.00	17.79	2.00	2.03	0.65	0.46	0.05	0.16	96.24	
		STDEV	0.85	0.37	0.12	0.17	0.06	0.17	0.08	0.03	0.85	
	TM	**UT1872fs-7**	75.06	12.51	3.07	3.13	0.48	0.65	0.14	0.12	95.25	
	TM	**UT1872hm-4**	75.00	12.51	3.02	3.18	0.46	0.65	0.09	0.17	95.15	
		AVERAGE	75.03	12.51	3.05	3.16	0.47	0.65	0.11	0.14	95.20	
		STDEV	0.04	0.00	0.03	0.04	0.01	0.01	0.04	0.03	0.07	
	TM-bad	**UT1872fs-3**	73.57	13.56	2.64	2.83	0.52	0.57	0.03	0.33	94.10	
	TM-bad	**UT1872fs-4**	73.39	13.68	2.61	2.76	0.52	0.57	0.03	0.18	93.80	
	TM-bad	**UT1872fs-5**	71.22	14.11	2.57	2.61	0.53	0.61	0.04	0.26	92.06	
	TM	**UT1872fs-17**	73.51	14.91	2.74	2.76	0.53	0.62	0.05	0.13	95.32	
	TM	**UT1872fs-19**	74.22	14.57	2.80	2.99	0.54	0.62	0.04	0.15	96.03	
	TM	**UT1872hm-3**	74.92	14.77	2.67	2.78	0.54	0.59	0.06	0.15	96.56	
	TM	**UT1872hm-7**	73.01	14.43	2.70	2.76	0.54	0.65	0.09	0.16	94.40	
	TM	**UT1872hm-8**	75.14	14.03	2.71	2.89	0.52	0.62	0.09	0.17	96.22	
	TM	**UT1872hm-14**	73.67	14.38	2.77	2.89	0.53	0.62	0.05	0.12	95.13	
		AVERAGE	73.63	14.27	2.69	2.81	0.53	0.61	0.05	0.18	94.85	
		STDEV	1.15	0.46	0.08	0.11	0.01	0.03	0.02	0.07	1.42	
BT	FI	**UT1884-2**	63.89	26.68	0.45	1.17	0.16	0.39	0.09	0.05	93.11	Apr. 26 2006
	FI	**UT1884-5**	65.46	27.68	0.48	1.17	0.18	0.38	0.07	0.04	95.47	
	FI	**UT1884-6**	65.94	27.45	0.48	1.11	0.21	0.42	0.02	0.04	95.74	
	FI	**UT1884-7**	65.84	27.32	0.47	1.17	0.18	0.39	0.04	0.02	95.50	
	FI	**UT1884-8**	65.73	27.43	0.50	1.15	0.18	0.42	0.10	0.01	95.56	
	FI	**UT1884-9**	62.91	27.82	0.48	1.28	0.19	0.42	0.06	0.02	93.19	

	FI	UT1884-10	61.72	27.75	0.50	1.27	0.22	0.33	0.11	0.01	91.95	
	FI	UT1884-13	64.10	27.47	0.47	1.16	0.17	0.29	0.05	0.07	93.84	
	FI	UT1884-15	63.63	27.49	0.50	1.17	0.16	0.37	0.09	0.33	93.96	
	FI	UT1884-16	64.79	27.49	0.48	1.19	0.18	0.40	0.09	0.03	94.69	
	FI	UT1884-17	65.36	27.40	0.48	1.29	0.16	0.40	0.12	0.03	95.36	
	FI	UT1884-19	65.71	27.16	0.49	1.20	0.18	0.42	0.00	0.06	95.29	
	FI	UT1884-20	65.55	27.64	0.48	1.09	0.18	0.40	0.09	0.04	95.49	
		AVERAGE	64.66	27.45	0.48	1.19	0.18	0.38	0.07	0.06	94.55	
		STDEV	1.32	0.29	0.01	0.06	0.02	0.04	0.04	0.08	1.22	
	TM	UT1884-3	84.74	4.39	2.51	1.39	0.38	0.49	0.23	0.07	94.33	
	TM	UT1884-4	85.77	4.40	2.54	1.41	0.42	0.49	0.21	0.06	95.36	
	TM-bad	UT1884-12	82.09	4.78	2.57	1.49	0.40	0.53	0.17	0.05	92.15	
	TM	UT1884-14	84.13	4.64	2.44	1.35	0.38	0.54	0.10	0.08	93.68	
	TM	UA1080-1	82.94	4.34	2.55	1.61	0.35	0.48	0.21	0.09	92.62	
		AVERAGE	83.93	4.51	2.52	1.45	0.39	0.50	0.18	0.07	93.63	
		STDEV	1.45	0.19	0.05	0.10	0.02	0.03	0.05	0.02	1.30	
CC	FI	UT 1885-3	60.76	29.21	0.35	1.43	0.22	0.39	0.14	0.05	92.60	Apr. 26 2007
	FI	UT 1885-7	62.24	27.60	0.95	1.66	0.21	0.44	0.08	0.27	93.63	
	FI	UT 1885-8	61.86	29.48	0.49	1.99	0.21	0.37	0.06	0.04	94.58	
	FI	UT 1885-9	61.24	29.59	0.48	1.53	0.25	0.41	0.05	0.05	93.63	
	FI	UT 1885-10	59.18	29.14	0.67	1.74	0.19	0.41	0.11	0.06	91.59	
	FI	UT 1885-11	61.86	28.74	0.47	1.48	0.15	0.39	0.04	0.03	93.18	
	FI	UT 1885-12	62.19	29.21	0.52	1.76	0.22	0.42	0.06	0.02	94.44	
	FI	UT 1885-16	64.12	28.55	0.44	1.46	0.22	0.40	0.06	0.01	95.37	
	FI	UT 1885-18	62.70	29.65	0.41	1.59	0.20	0.39	0.10	0.09	95.18	
	FI	UT 1885-19	61.67	29.15	0.49	1.62	0.15	0.42	0.08	0.04	93.67	
	FI	UT 1885-20	61.30	29.10	0.43	1.51	0.19	0.41	0.07	0.03	93.05	
		AVERAGE	61.74	29.04	0.52	1.62	0.20	0.40	0.08	0.06	93.72	
		STDEV	1.23	0.58	0.17	0.17	0.03	0.02	0.03	0.07	1.13	
	TM	UT 1885-6	82.39	5.78	2.82	2.11	0.40	0.49	0.23	0.07	94.33	
	TM	UT 1885-13	82.13	5.95	2.59	2.31	0.40	0.53	0.21	0.09	94.23	
	TM	UT 1885-14	83.01	5.71	2.32	1.73	0.33	0.54	0.17	0.10	93.99	
		AVERAGE	82.51	5.82	2.58	2.05	0.38	0.52	0.20	0.08	94.19	

		STDEV	0.46	0.12	0.25	0.30	0.04	0.03	0.03	0.02	0.17	
	TM	**UT 1885-15**	69.57	23.19	1.38	1.09	0.48	0.46	0.11	0.04	96.42	
CB$_1$	FI-bad	**UA1083-4**	57.00	31.82	1.10	2.38	0.30	0.25	0.08	0.32	93.38	Apr. 26 2006
	FI	**UT1881-3**	62.18	28.67	0.57	1.63	0.18	0.32	0.16	0.05	93.85	
	FI	**UT1881-4**	61.63	30.39	0.48	1.64	0.23	0.31	0.03	0.03	94.81	
	FI	**UT1881-5**	60.69	28.97	0.49	1.57	0.20	0.31	0.09	0.07	92.99	
	FI	**UT1881-7**	63.03	28.30	0.57	1.31	0.17	0.33	0.04	0.03	94.08	
	FI	**UT1881-8**	62.20	28.72	0.52	1.64	0.20	0.28	0.08	0.05	93.72	
	FI	**UT1881-9**	64.00	29.33	0.54	1.57	0.19	0.36	0.09	0.04	96.14	
	FI	**UT1881-13**	60.76	29.59	0.51	1.58	0.19	0.44	0.05	0.02	93.19	
	FI	**UT1881-16**	61.51	28.88	0.56	1.44	0.19	0.32	0.12	0.05	93.15	
	FI	**UT1881-17**	62.20	28.63	0.71	1.60	0.19	0.31	0.08	0.10	93.91	
	FI	**UT1881-18**	63.69	28.89	0.56	1.49	0.19	0.31	0.12	0.04	95.33	
	FI	**UT1881-19**	61.26	27.18	0.48	1.51	0.18	0.28	0.11	0.07	91.08	
		AVERAGE	62.10	28.87	0.54	1.54	0.19	0.32	0.09	0.05	93.84	
		STDEV	1.10	0.80	0.06	0.10	0.02	0.04	0.04	0.02	1.33	
PrH	MAG	**UA1217fs-1**	92.16	0.32	0.11	0.02	0.06	0.34	0.10	0.12	93.23	Oct. 31 2006
	MAG	**UA1217fs-2**	91.64	0.77	0.14	0.01	0.09	0.34	0.11	0.10	93.19	
		AVERAGE	91.90	0.54	0.13	0.01	0.08	0.34	0.10	0.11	93.21	
		STDEV	0.37	0.32	0.02	0.01	0.02	0.00	0.01	0.01	0.02	
	TM	**UA1217hm-2**	88.82	2.02	1.36	0.51	0.35	0.54	0.12	0.07	93.83	
	TM	**UA1217hm-3**	89.87	2.06	0.89	0.25	0.33	0.52	0.13	0.12	94.23	
	TM	**UA1217hm-20**	88.83	2.66	1.11	0.08	0.27	0.65	0.05	0.21	94.05	
		AVERAGE	89.17	2.25	1.12	0.28	0.32	0.57	0.10	0.13	94.04	
		STDEV	0.60	0.36	0.24	0.22	0.04	0.07	0.04	0.07	0.20	
	TM	**UA1217hm-12**	86.43	3.76	2.45	0.93	0.63	0.07	0.00	0.11	94.56	
	TM	**UA1217hm-13**	86.06	3.74	2.56	0.97	0.65	0.09	0.01	0.09	94.40	
	TM	**UA1217hm-18**	86.07	3.78	2.54	0.97	0.62	0.06	0.00	0.13	94.34	
	TM	**UA1217hm-19**	87.33	3.78	2.39	0.84	0.64	0.08	0.02	0.08	95.35	
	TM	**UA1217hm-25**	85.94	3.78	2.57	0.93	0.63	0.08	0.00	0.14	94.28	
		AVERAGE	86.37	3.77	2.50	0.93	0.63	0.08	0.01	0.11	94.58	

		STDEV	0.57	0.02	0.08	0.05	0.01	0.01	0.01	0.02	0.44	
	TM	**UA1217hm-4**	83.81	3.89	4.26	1.17	0.74	0.09	0.01	0.10	94.24	
	TM	**UA1217hm-5**	83.78	4.81	4.04	0.92	0.84	0.09	0.00	0.10	94.82	
		AVERAGE	83.80	4.35	4.15	1.04	0.79	0.09	0.00	0.10	94.53	
		STDEV	0.02	0.65	0.15	0.18	0.07	0.00	0.00	0.00	0.41	
PrH/MC	TM	**UA1075fs-1**	86.23	3.76	2.51	0.95	0.62	0.07	0.00	0.10	94.40	Oct. 31 2006
mixed	TM	**UA1075fs-2**	85.71	3.78	2.47	0.94	0.65	0.08	0.03	0.12	93.97	
	TM	**UA1075fs-3**	86.67	3.78	2.52	0.98	0.67	0.06	0.00	0.11	94.95	
	TM	**UA1075fs-4**	85.57	3.76	2.54	1.00	0.66	0.08	0.00	0.12	93.90	
	TM	**UA1075fs-12**	86.90	3.32	1.05	0.23	0.15	0.41	0.14	0.14	92.53	
	TM	**UA1075fs-19**	85.43	3.71	2.53	0.96	0.65	0.10	0.00	0.16	93.69	
	TM	**UA1075fs-20**	85.85	3.69	3.62	0.93	0.60	0.08	0.00	0.13	95.09	
	TM	**UA1075hm-1**	86.11	3.70	2.44	0.89	0.62	0.06	0.00	0.12	94.12	
	TM	**UA1075hm-2**	85.67	3.70	2.55	0.93	0.63	0.08	0.00	0.17	93.92	
	TM	**UA1075hm-5**	85.15	3.65	2.37	0.88	0.59	0.10	0.00	0.09	92.99	
	TM	**UA1075hm-10**	86.96	3.79	2.48	0.91	0.61	0.08	0.00	0.13	95.15	
	TM	**UA1075hm-11**	86.06	3.72	2.33	0.90	0.68	0.08	0.00	0.13	94.06	
	TM-bad	**UA1075hm-13**	84.41	3.33	2.34	0.96	0.60	0.06	0.00	0.16	92.05	
	TM	**UA1075hm-14**	86.22	3.62	2.33	0.85	0.58	0.09	0.01	0.12	94.00	
	TM	**UA1075hm-15**	86.24	3.70	2.41	0.90	0.62	0.09	0.01	0.10	94.24	
		AVERAGE	85.94	3.67	2.43	0.88	0.60	0.10	0.01	0.13	93.94	
		STDEV	0.67	0.14	0.49	0.18	0.13	0.09	0.04	0.02	0.87	
	MAG	**UA1075fs-9**	92.31	0.29	0.33	0.00	0.05	0.37	0.05	0.09	93.49	
	MAG	**UA1075fs-10**	92.79	0.34	0.36	0.00	0.08	0.38	0.15	0.13	94.24	
	MAG	**UA1075fs-13**	92.79	0.18	0.07	0.00	0.03	0.52	0.05	0.12	93.76	
	MAG	**UA1075fs-14**	90.33	0.09	0.15	0.02	0.05	0.28	0.15	0.40	91.49	
	MAG	**UA1075fs-15**	92.86	0.55	0.11	0.00	0.14	0.29	0.04	0.08	94.08	
		AVERAGE	92.22	0.29	0.21	0.01	0.07	0.37	0.08	0.16	93.41	
		STDEV	1.08	0.17	0.13	0.01	0.04	0.10	0.06	0.13	1.11	
	TM	**UA1075hm-7**	89.16	2.54	0.53	1.01	0.86	0.30	0.15	0.08	94.78	
	TM	**UA1075hm-8**	88.18	2.21	0.56	0.96	0.79	0.28	0.12	0.10	93.38	
		AVERAGE	88.67	2.38	0.54	0.98	0.83	0.29	0.13	0.09	94.08	
		STDEV	0.69	0.23	0.02	0.04	0.05	0.01	0.02	0.01	0.99	

	TM	**UA1075hm-4**	73.60	17.67	1.65	1.54	0.57	0.77	0.05	0.14	96.17	
SR	TM	**UA1220fs-1**	82.83	5.06	2.17	1.41	0.55	0.45	0.03	0.14	92.73	Oct. 31 2006
	TM	**UA1220fs-2**	83.80	5.03	2.08	1.42	0.59	0.43	0.01	0.12	93.57	
	TM-bad	**UA1220fs-8**	82.59	4.98	2.03	1.32	0.53	0.42	0.04	0.17	92.17	
	TM	**UA1220fs-13**	82.79	5.11	1.87	1.59	0.63	0.33	0.01	0.22	92.66	
	TM	**UA1220hm-5**	83.97	5.19	2.16	1.35	0.54	0.42	0.05	0.20	93.97	
	TM	**UA1220hm-6**	84.35	5.18	2.16	1.24	0.54	0.43	0.02	0.12	94.12	
	TM	**UA1220hm-8**	83.44	5.32	2.12	1.25	0.54	0.43	0.01	0.15	93.33	
	TM	**UA1220hm-9**	82.86	5.20	2.26	1.29	0.56	0.45	0.02	0.17	92.93	
	TM	**UA1220hm-11**	83.13	5.17	2.18	1.30	0.56	0.45	0.06	0.13	93.07	
	TM	**UA1220hm-12**	83.17	5.33	2.11	1.25	0.57	0.48	0.02	0.16	93.20	
	TM	**UA1220hm-13**	84.09	5.40	1.90	1.42	0.62	0.39	0.02	0.17	94.10	
		AVERAGE	83.37	5.18	2.09	1.35	0.57	0.43	0.02	0.16	93.26	
		STDEV	0.60	0.13	0.12	0.11	0.03	0.04	0.02	0.03	0.64	
WRN	TM	**UA1044-1**	82.31	5.21	2.06	1.31	0.39	0.29	0.02	0.06	91.65	Oct 31 2006
	TM	**UA1044-2**	81.07	5.28	2.22	1.28	0.41	0.29	0.02	0.10	90.66	
	TM	**UA1044-4**	80.62	4.86	2.16	1.49	0.37	0.30	0.03	0.15	89.98	
	TM	**UA1044-5**	80.24	6.17	2.33	1.42	0.36	0.36	0.02	0.11	91.01	
	TM	**UA1044-6**	79.48	5.77	2.23	1.38	0.36	0.35	0.04	0.07	89.68	
	TM	**UA1044-7**	79.36	5.36	2.33	1.60	0.39	0.34	0.04	0.14	89.53	
	TM	**UA1044-8**	81.06	5.74	2.33	1.41	0.37	0.34	0.10	0.06	91.41	
	TM	**UA1044-9**	80.30	5.55	2.31	1.63	0.38	0.34	0.04	0.10	90.64	
	TM	**UA1044-10**	80.93	5.61	2.36	1.72	0.36	0.37	0.03	0.10	91.47	
	TM	**UA1044-11**	80.87	5.69	2.17	1.34	0.37	0.34	0.02	0.06	90.84	
	TM	**UA1044-12**	80.65	5.72	2.22	1.49	0.37	0.35	0.03	0.12	90.95	
	TM	**UA1046-m1**	82.24	5.77	2.29	1.28	0.41	0.34	0.03	0.09	92.54	
	TM	**UA1046-m3**	81.00	6.18	2.56	1.69	0.35	0.40	0.02	0.11	92.33	
	TM	**UA1046-m4**	81.62	5.49	2.12	1.24	0.40	0.33	0.03	0.12	91.40	
	TM	**UA1046-m6**	83.77	5.46	2.00	0.96	0.43	0.30	0.10	0.08	93.16	
	TM	**UA1046-m7**	82.38	5.31	1.92	0.91	0.43	0.30	0.07	0.09	91.46	
	TM	**UA1046-m8**	82.40	5.72	2.08	0.98	0.41	0.30	0.04	0.09	92.04	
	TM	**UA1046-m9**	81.72	5.87	2.27	1.37	0.34	0.36	0.03	0.09	92.11	

	TM	**UA1046-m10**	80.56	6.05	2.47	1.53	0.34	0.39	0.04	0.10	91.49	
	TM	**UA1046-m12**	81.33	6.07	2.47	1.57	0.30	0.44	0.06	0.10	92.36	
		AVERAGE	81.20	5.64	2.24	1.38	0.38	0.34	0.04	0.10	91.34	
		STDEV	1.07	0.34	0.16	0.23	0.03	0.04	0.02	0.02	0.96	
	FI	**UA1044-13IL**	55.97	34.42	0.36	1.82	0.31	0.44	0.01	0.05	93.38	
	FI	**UA1044-13IL**	54.27	36.70	0.26	2.01	0.42	0.40	0.01	0.03	94.10	
	FI	**UA1044-13IL**	56.28	33.39	0.36	1.89	0.29	0.44	0.01	0.06	92.73	
	FI	**UA1044-13IL**	56.94	33.51	0.39	1.65	0.29	0.47	0.00	0.03	93.27	
	FI	**UA1044-13IL**	56.71	32.65	0.39	2.02	0.31	0.42	0.00	0.08	92.57	
	FI	**UA1044-13IL**	54.30	35.56	0.32	2.15	0.37	0.47	0.01	0.04	93.23	
	FI	**UA1044-13IL**	54.39	37.28	0.26	1.97	0.42	0.38	0.01	0.01	94.73	
	FI	**UA1044-13IL**	54.48	37.05	0.27	1.83	0.42	0.40	0.02	0.03	94.48	
	FI	**UA1044-13IL**	54.34	36.40	0.31	2.18	0.39	0.39	0.01	0.05	94.07	
	FI	**UA1044-13IL**	54.49	36.09	0.30	2.12	0.38	0.39	0.00	0.09	93.87	
	FI	**UA1046-IL1**	59.06	31.82	0.36	1.57	0.17	0.58	0.03	0.06	93.68	
	FI	**UA1046-IL2**	57.28	34.42	0.44	2.06	0.28	0.45	0.01	0.34	95.41	
	FI	**UA1046-IL5**	57.60	33.93	0.37	1.89	0.27	0.46	0.01	0.03	94.59	
	FI	**UA1046-IL6**	53.48	38.77	0.20	1.72	0.60	0.42	0.00	0.06	95.27	
	FI	**UA1046-IL7**	52.26	39.86	0.21	2.05	0.58	0.44	0.01	0.03	95.46	
	FI	**UA1046-IL8**	55.45	35.06	0.50	2.49	0.44	0.41	0.01	0.03	94.42	
	FI	**UA1046-IL10**	52.77	36.28	0.23	1.83	0.49	0.41	0.03	0.05	93.76	
	FI	**UA1046-IL11**	58.00	33.63	0.46	1.95	0.31	0.46	0.01	0.06	94.92	
	FI	**UA1046-IL12**	57.96	33.64	0.37	1.78	0.27	0.45	0.00	0.03	94.55	
		AVERAGE	55.58	35.29	0.33	1.95	0.37	0.44	0.01	0.06	94.13	
		STDEV	1.92	2.10	0.08	0.21	0.11	0.04	0.01	0.07	0.86	
	ILM	**UA1046-IL3**	45.82	49.85	0.04	0.14	1.00	0.49	0.01	0.04	97.44	
	ILM	**UA1046-IL4**	43.74	48.26	0.00	0.07	4.74	0.35	0.00	0.01	97.17	
	ILM	**UA1046-IL9**	50.63	41.23	0.19	2.19	0.73	0.45	0.01	0.05	95.54	
		AVERAGE	46.73	46.44	0.08	0.80	2.16	0.43	0.01	0.03	96.72	
		STDEV	3.53	4.58	0.10	1.21	2.24	0.07	0.01	0.02	1.03	
	TM	**UA1044-3**	78.86	6.00	6.08	1.41	0.30	0.37	0.03	0.15	93.19	
WRE	TM	**UA1045-m1**	81.26	5.71	2.39	1.50	0.30	0.43	0.04	0.05	91.70	Oct 31 2006
	TM	**UA1045-m2**	83.32	5.68	2.33	1.48	0.34	0.42	0.04	0.07	93.75	

TM	**UA1045-m3**	82.91	5.23	2.22	1.37	0.36	0.39	0.05	0.09	92.64
TM	**UA1045-m4**	84.30	5.54	2.42	1.52	0.32	0.43	0.03	0.11	94.68
TM	**UA1045-m5**	82.17	5.34	2.26	1.37	0.33	0.40	0.04	0.08	92.01
TM	**UA1045-m6**	82.28	5.67	2.47	1.53	0.32	0.41	0.03	0.09	92.83
TM	**UA1045-m7**	82.73	4.71	1.91	1.12	0.36	0.40	0.02	0.08	91.34
TM	**UA1045-m8**	81.46	5.69	2.40	1.55	0.35	0.42	0.04	0.07	92.00
TM	**UA1045-m9**	81.59	5.68	2.43	1.44	0.34	0.39	0.04	0.10	92.02
TM	**UA1045-m10**	81.11	5.88	2.48	1.49	0.34	0.42	0.04	0.07	91.85
TM	**UA1045-m11**	82.42	5.68	2.41	1.50	0.32	0.42	0.06	0.10	92.93
TM	**UA1045-m12**	81.34	5.58	2.34	1.45	0.35	0.40	0.03	0.08	91.62
TM	**UA1119-m1**	82.59	5.71	2.30	1.50	0.33	0.42	0.05	0.11	93.04
TM	**UA1119-m2**	82.32	5.69	2.37	1.47	0.34	0.41	0.03	0.08	92.74
TM	**UA1119-m3**	81.89	5.66	2.37	1.42	0.34	0.40	0.04	0.08	92.26
TM	**UA1119-m4**	83.51	5.72	2.33	1.50	0.34	0.39	0.03	0.07	93.91
TM	**UA1119-m5**	82.85	5.82	2.32	1.51	0.36	0.37	0.04	0.05	93.36
TM	**UA1119-m6**	82.72	5.63	2.33	1.49	0.34	0.40	0.04	0.07	93.04
TM	**UA1119-m7**	85.93	6.08	2.50	1.57	0.34	0.44	0.03	0.07	96.97
TM	**UA1119-m8**	82.63	5.67	2.40	1.47	0.33	0.41	0.02	0.11	93.06
TM	**UA1119-m9**	82.14	5.79	2.39	1.56	0.33	0.38	0.02	0.09	92.71
TM	**UA1119-m10**	81.85	5.59	2.48	1.54	0.33	0.42	0.02	0.08	92.36
TM	**UA1119-m11**	83.51	5.68	2.45	1.49	0.32	0.44	0.04	0.07	94.01
TM	**UA1119-m12**	82.49	5.38	2.27	1.42	0.32	0.35	0.03	0.08	92.37
TM	**UA1120-m-1**	85.17	4.16	1.76	1.00	0.41	0.37	0.04	0.10	93.01
TM	**UA1120-m2**	83.02	5.66	2.48	1.48	0.33	0.43	0.04	0.07	93.53
TM	**UA1120-m3**	84.99	4.10	1.70	1.00	0.38	0.36	0.04	0.07	92.66
TM	**UA1120-m4**	82.04	5.65	2.47	1.48	0.31	0.43	0.04	0.07	92.51
TM	**UA1121-m1**	82.29	5.57	2.26	1.43	0.32	0.39	0.03	0.10	92.40
	AVERAGE	82.72	5.52	2.32	1.44	0.34	0.40	0.04	0.08	92.87
	STDEV	1.17	0.45	0.20	0.15	0.02	0.02	0.01	0.02	1.10
FI	**UA1045-IL1**	63.34	28.03	0.40	1.06	0.15	0.46	0.01	0.03	93.53
FI	**UA1045-IL2**	63.63	27.71	0.33	0.89	0.20	0.47	0.00	0.05	93.33
FI	**UA1045-IL3**	64.55	27.45	0.32	0.83	0.21	0.41	0.02	0.05	93.90
FI	**UA1045-IL4**	62.93	27.85	0.35	0.98	0.17	0.46	0.02	0.04	92.82
FI	**UA1045-IL5**	63.26	27.85	0.35	0.96	0.18	0.45	0.00	0.03	93.13

FI	UA1045-IL6	63.58	27.57	0.34	0.88	0.19	0.44	0.00	0.02	93.03
FI	UA1045-IL7	62.98	28.24	0.39	1.09	0.17	0.47	0.02	0.04	93.50
FI	UA1045-IL9	62.58	27.79	0.35	0.94	0.19	0.44	0.02	0.05	92.44
FI	UA1045-IL10	62.84	27.87	0.35	0.92	0.20	0.43	0.02	0.04	92.73
FI	UA1045-IL11	63.47	26.71	0.32	0.80	0.20	0.45	0.01	0.06	92.13
FI	UA1045-IL12	63.80	27.18	0.32	0.79	0.19	0.46	0.01	0.03	92.83
FI	UA1119-IL1	61.29	29.83	0.44	1.43	0.20	0.46	0.02	0.07	93.89
FI	UA1119-IL2	61.89	27.77	0.46	1.27	0.15	0.46	0.02	0.09	92.18
FI	UA1119-IL3	61.55	28.93	0.44	1.48	0.19	0.45	0.02	0.08	93.31
FI	UA1119-IL4	61.58	28.29	0.45	1.30	0.19	0.45	0.02	0.09	92.53
FI	UA1119-IL6	61.01	28.60	0.59	1.50	0.17	0.51	0.02	0.07	92.62
FI	UA1119-IL7	61.30	29.74	0.43	1.39	0.20	0.48	0.00	0.03	93.57
FI	UA1119-IL8	62.86	29.38	0.44	1.36	0.19	0.47	0.01	0.04	94.79
FI	UA1119-IL9	61.93	29.36	0.42	1.34	0.21	0.43	0.02	0.04	93.79
FI	UA1119-IL10	62.11	29.07	0.45	1.43	0.19	0.48	0.02	0.05	93.82
FI	UA1119-IL11	61.76	29.75	0.45	1.50	0.19	0.48	0.03	0.03	94.21
FI	UA1119-IL12	61.62	29.62	0.39	1.41	0.20	0.47	0.02	0.03	93.77
FI	UA1120-IL1	62.79	29.01	0.45	1.25	0.18	0.48	0.03	0.03	94.23
FI	UA1120-IL2	64.27	27.47	0.36	0.89	0.21	0.44	0.02	0.04	93.72
FI	UA1120-IL3	64.10	27.03	0.34	0.82	0.18	0.42	0.02	0.07	92.99
FI	UA1120-IL4	64.39	27.48	0.35	0.86	0.21	0.45	0.02	0.01	93.81
FI	UA1120-IL5	64.92	26.76	0.31	0.83	0.22	0.47	0.02	0.09	93.70
FI	UA1120-IL6	64.57	27.19	0.29	0.76	0.19	0.45	0.02	0.05	93.55
FI	UA1120-IL7	64.93	26.84	0.32	0.80	0.20	0.42	0.02	0.06	93.62
FI	UA1120-IL8	64.61	27.34	0.34	0.89	0.19	0.45	0.02	0.03	93.89
FI	UA1120-IL9	64.72	27.03	0.34	0.86	0.22	0.42	0.01	0.06	93.70
FI	UA1120-IL10	62.48	27.54	0.39	0.90	0.17	0.44	0.03	0.02	92.00
FI	UA1120-IL11	63.80	27.87	0.41	1.04	0.17	0.47	0.02	0.04	93.83
FI	UA1121-IL1	61.17	25.91	6.95	0.75	0.20	0.44	0.01	0.05	95.50
FI	UA1121-IL3	63.76	26.28	0.39	0.92	0.21	0.41	0.02	0.06	92.05
	AVERAGE	63.04	27.95	0.57	1.06	0.19	0.45	0.02	0.05	93.38
	STDEV	1.21	1.03	1.11	0.26	0.02	0.02	0.01	0.02	0.77
FI	UA1119-IL5	53.58	36.79	0.34	2.75	0.33	0.53	0.05	0.06	94.68
ILM	UA1121-IL2	45.50	49.20	0.00	0.13	1.49	0.45	0.02	0.04	96.93

6.2.1. Recalculated FeO and Fe_2O_3

Name	Species	Sample	TiO_2	V_2O_3	Cr_2O_3	Al_2O_3	MnO	SiO_2	FeO	MgO	Fe_2O_3	Total
CR	ILM	UT1878fs-8	53.48	0.20	0.00	0.01	2.08	0.06	44.49	0.44	0.00	100.76
	ILM	UT1878fs-9	53.40	0.23	0.00	0.03	2.02	0.07	44.75	0.43	0.00	100.93
	ILM	UT1878fs-10	53.37	0.20	0.00	0.03	2.05	0.05	44.65	0.46	0.00	100.81
	ILM	UT1878fs-14	53.16	0.22	0.04	0.05	1.64	0.04	46.12	0.05	0.21	101.53
	ILM	UT1878fs-15	53.14	0.24	0.03	0.02	1.63	0.07	45.51	0.05	0.00	100.69
	ILM	UT1878fs-17	52.27	0.20	0.00	0.04	2.68	0.06	43.91	0.04	0.00	99.20
		AVERAGE	53.14	0.22	0.01	0.03	2.02	0.06	44.90	0.25	0.04	100.65
		STDEV	0.45	0.02	0.02	0.01	0.38	0.01	0.79	0.22	0.09	0.77
	ILM	UT1878fs-5	49.14	0.27	0.03	0.11	0.59	0.07	37.67	3.38	8.04	99.30
	ILM	UT1878fs-6	49.21	0.28	0.00	0.09	0.56	0.09	38.16	3.17	8.12	99.67
	ILM	UT1878fs-12	51.28	0.28	0.01	0.02	1.90	0.08	44.25	0.03	2.29	100.14
	ILM	UA1059-8	49.18	0.08	0.00	0.06	0.73	0.08	42.06	0.86	2.50	95.54
	ILM	UA1069-4	49.66	0.11	0.03	0.11	0.51	0.05	39.93	2.41	4.90	97.71
		AVERAGE	49.69	0.20	0.01	0.08	0.86	0.07	40.41	1.97	5.17	98.47
		STDEV	0.91	0.10	0.02	0.04	0.59	0.01	2.75	1.47	2.85	1.88
	ILM	UA1069-6	46.09	0.15	0.01	0.05	0.74	0.15	38.38	1.40	10.56	97.53
	ILM	UA1069-7	47.30	0.07	0.00	0.12	0.71	0.03	36.91	2.78	11.33	99.25
	ILM	UT1878fs-1	47.46	0.64	0.00	0.11	0.49	0.05	39.05	1.80	10.89	100.49
	ILM	UT1878fs-2	47.24	0.62	0.04	0.09	0.48	0.06	38.52	2.00	11.50	100.54
		AVERAGE	47.02	0.37	0.01	0.09	0.60	0.07	38.21	2.00	11.07	99.45
		STDEV	0.63	0.30	0.02	0.03	0.14	0.05	0.91	0.58	0.42	1.42
	FI	UT1878fs-11	46.84	0.27	0.02	0.03	1.41	0.05	40.71	0.03	11.45	100.82
	FI	UT1878fs-13	45.85	0.29	0.00	0.04	1.42	0.05	39.78	0.05	12.93	100.40
		AVERAGE	46.35	0.28	0.01	0.04	1.42	0.05	40.25	0.04	12.19	100.61
		STDEV	0.70	0.01	0.01	0.01	0.01	0.00	0.66	0.01	1.04	0.29
	FI	UT1878fs-16	29.42	0.22	0.02	0.58	0.22	0.10	24.06	1.29	43.47	99.38
	FI	UA1069-5	27.69	0.32	0.04	0.71	0.15	0.11	22.26	1.47	46.04	98.79
	FI	UA1069-10	28.54	0.33	0.01	0.60	0.19	0.06	22.89	1.49	46.01	100.11
	FI	UA1069-11	27.98	0.38	0.04	0.63	0.15	0.05	22.58	1.40	46.62	99.84
		AVERAGE	28.41	0.31	0.03	0.63	0.18	0.08	22.95	1.41	45.54	99.53
		STDEV	0.76	0.07	0.01	0.06	0.03	0.03	0.78	0.09	1.41	0.58

	TM	**UT1878hm-3**	6.00	0.45	0.19	2.22	0.35	0.14	34.12	1.51	53.71	98.69
	TM	**UT1878hm-4**	5.82	0.45	0.18	2.37	0.37	0.10	34.02	1.66	54.85	99.82
	TM bad	**UT1878hm-5**	6.23	0.53	0.30	1.61	0.38	0.25	33.69	1.23	50.96	95.17
	TM bad	**UT1878hm-6**	6.24	0.53	0.34	1.84	0.38	0.26	33.94	1.41	51.75	96.69
	TM	**UT1887hm-8**	5.53	0.17	0.03	3.32	0.47	0.18	33.68	1.88	54.89	100.16
	TM bad	**UT1887hm-9**	5.60	0.15	0.01	2.72	0.49	0.11	33.29	1.56	53.87	97.79
		AVERAGE	5.90	0.38	0.18	2.35	0.41	0.17	33.79	1.54	53.34	98.06
		STDEV	0.31	0.17	0.14	0.62	0.06	0.07	0.30	0.22	1.63	1.91
GI	TM	**UA1242fs-2**	13.93	0.59	0.06	2.53	0.53	0.20	39.61	2.71	38.56	98.72
(ref)	TM	**UA1242fs-10**	13.64	0.63	0.06	2.74	0.58	0.13	39.03	2.92	39.36	99.09
	TM	**UA1242hm-10**	14.33	0.63	0.04	2.72	0.51	0.17	39.58	2.92	37.50	98.40
	TM	**UA1242hm-11**	14.33	0.59	0.20	2.73	0.52	0.15	40.38	2.94	39.34	101.18
	TM	**UA1242hm-12**	13.04	0.63	0.10	2.84	0.48	0.16	38.82	3.00	41.03	100.10
	TM	**UA1242hm-17**	14.17	0.64	0.08	2.72	0.51	0.17	40.03	2.82	38.70	99.85
		AVERAGE	13.91	0.62	0.09	2.71	0.52	0.16	39.57	2.89	39.08	99.56
		STDEV	0.50	0.02	0.06	0.10	0.03	0.02	0.59	0.10	1.17	1.03
	TM	**UA1242fs-5**	11.19	0.74	0.11	3.34	0.39	0.20	36.93	3.14	43.45	99.49
	TM	**UA1242fs-6**	11.09	0.75	0.10	3.42	0.42	0.19	37.22	3.16	44.57	100.92
	TM	**UA1242fs-8**	11.77	0.79	0.11	3.23	0.44	0.16	37.60	3.19	43.27	100.56
	TM	**UA1242fs-9**	11.73	0.79	0.15	3.27	0.43	0.15	37.64	3.14	43.25	100.55
	TM	**UA1242hm-3**	11.02	0.85	0.19	3.61	0.40	0.14	36.58	3.59	44.85	101.22
	TM	**UA1242hm-4**	10.99	0.85	0.20	3.51	0.43	0.14	36.36	3.58	44.66	100.72
	TM	**UA1242hm-6**	11.32	0.74	0.12	3.44	0.42	0.16	36.73	3.29	43.19	99.41
		AVERAGE	11.30	0.79	0.14	3.40	0.42	0.16	37.01	3.30	43.89	100.41
		STDEV	0.33	0.05	0.04	0.13	0.02	0.02	0.50	0.20	0.76	0.70
	TM	**UA1242fs-4**	17.74	0.40	0.04	1.99	0.63	0.18	44.32	1.93	32.09	99.32
	TM	**UA1242fs-7**	17.32	0.40	0.02	1.82	0.67	0.23	43.54	1.82	31.71	97.53
	TM	**UA1242fs-11**	17.83	0.44	0.02	1.93	0.67	0.16	44.39	2.08	32.75	100.27
	TM	**UA1242fs-12**	17.96	0.46	0.02	1.90	0.66	0.14	44.86	1.97	32.95	100.92
	TM	**UA1242fs-13**	17.93	0.43	0.05	1.88	0.64	0.14	44.44	1.96	32.08	99.55
	TM	**UA1242fs-14**	18.23	0.43	0.07	2.01	0.63	0.12	44.77	2.01	31.66	99.93
	TM-bad	**UA1242fs-15**	17.43	0.42	0.00	1.95	0.70	0.31	43.33	2.00	30.97	97.11
	TM	**UA1242fs-16**	17.93	0.44	0.03	2.04	0.65	0.11	44.51	2.05	32.53	100.29

	TM-bad	**UA1242fs-17**	18.74	0.42	0.01	2.07	0.66	0.13	44.47	1.96	28.77	97.23
	TM	**UA1242fs-18**	18.04	0.42	0.05	1.88	0.67	0.13	44.90	2.02	33.02	101.13
	TM	**UA1242fs-19**	17.69	0.44	0.01	2.05	0.63	0.14	44.51	2.15	33.69	101.31
	TM	**UA1242fs-20**	17.74	0.44	0.01	1.99	0.68	0.17	44.29	2.09	32.82	100.24
	TM	**UA1242hm-1**	17.77	0.43	0.03	1.99	0.68	0.13	44.24	2.03	32.56	99.86
	TM	**UA1242hm-2**	17.66	0.45	0.06	1.95	0.65	0.19	44.49	2.00	33.05	100.50
	TM	**UA1242hm-5**	18.47	0.44	0.05	1.96	0.66	0.13	45.39	1.95	31.97	101.02
	TM	**UA1242hm-7**	17.78	0.46	0.03	1.93	0.66	0.19	44.67	1.97	32.92	100.61
	TM	**UA1242hm-9**	17.54	0.43	0.01	1.99	0.65	0.15	44.22	2.09	33.51	100.60
	TM-bad	**UA1242hm-13**	18.31	0.47	0.00	2.09	0.59	0.13	44.26	1.96	29.79	97.60
	TM	**UA1242hm-14**	18.99	0.48	0.02	1.96	0.64	0.12	45.42	1.93	29.86	99.42
	TM	**UA1242hm-15**	17.71	0.44	0.02	2.00	0.67	0.15	44.22	2.09	32.83	100.13
	TM	**UA1242hm-16**	17.82	0.40	0.02	1.97	0.65	0.16	44.64	1.87	32.46	99.99
		AVERAGE	17.93	0.44	0.03	1.97	0.65	0.16	44.47	2.00	32.10	99.74
		STDEV	0.41	0.02	0.02	0.07	0.02	0.05	0.48	0.08	1.28	1.30
GI	TM	**UT1872fs-1**	17.44	0.42	0.02	2.05	0.67	0.21	43.79	1.96	32.06	98.62
(new)	TM	**UT1872fs-2**	17.42	0.40	0.04	1.87	0.65	0.21	43.76	1.94	32.24	98.53
	TM	**UT1872fs-6**	17.44	0.38	0.04	1.99	0.64	0.26	43.70	1.97	31.69	98.10
	TM	**UT1872fs-8**	17.07	0.40	0.00	1.98	0.67	0.18	43.32	2.04	33.14	98.80
	TM	**UT1872fs-9**	17.31	0.41	0.03	1.96	0.63	0.18	43.80	1.99	32.95	99.26
	TM	**UT1872fs-10**	17.21	0.42	0.01	2.03	0.64	0.18	43.36	2.09	32.68	98.61
	TM	**UT1872fs-11**	17.74	0.46	0.04	1.99	0.68	0.14	44.26	2.01	32.55	99.87
	TM	**UT1872fs-12**	17.66	0.45	0.03	2.01	0.67	0.17	44.16	2.00	32.40	99.54
	TM	**UT1872fs-13**	17.44	0.41	0.03	1.98	0.69	0.15	43.67	1.98	32.35	98.70
	TM	**UT1872fs-14**	17.84	0.44	0.04	1.93	0.66	0.14	44.23	2.03	32.22	99.54
	TM	**UT1872fs-15**	17.75	0.44	0.00	2.05	0.66	0.16	44.06	2.07	32.11	99.31
	TM	**UT1872fs-16**	17.94	0.43	0.01	1.97	0.66	0.16	44.88	1.97	32.89	100.90
	TM	**UT1872fs-18**	18.26	1.27	0.42	2.53	0.36	0.15	43.92	2.82	30.04	99.77
	TM	**UT1872hm-1**	17.93	0.43	0.03	2.00	0.66	0.15	44.57	2.08	32.66	100.51
	TM	**UT1872hm-2**	18.10	0.44	0.04	1.96	0.68	0.15	44.84	2.01	32.41	100.64
	TM	**UT1872hm-5**	17.93	0.42	0.04	2.03	0.67	0.14	44.25	2.03	31.79	99.30
	TM	**UT1872hm-6**	17.84	0.42	0.04	1.94	0.67	0.17	44.79	1.99	33.17	101.03
	TM	**UT1872hm-9**	18.16	0.46	0.01	1.89	0.66	0.14	44.50	1.93	31.21	98.96

	TM	**UT1872hm-10**	18.11	0.43	0.02	1.96	0.67	0.14	44.60	1.96	31.69	99.57
	TM	**UT1872hm-11**	18.39	0.45	0.13	2.10	0.61	0.18	44.89	1.92	30.36	99.03
	TM	**UT1872hm-12**	18.08	0.43	0.03	1.96	0.65	0.15	44.64	2.02	32.03	99.99
	TM bad	**UT1872hm-13**	17.34	0.36	0.00	1.92	0.66	0.22	43.42	1.96	31.86	97.74
	TM	**UT1872hm-15**	18.31	0.41	0.07	1.94	0.66	0.14	44.47	1.94	30.51	98.46
	TM	**UT1872hm-16**	17.92	0.45	0.00	1.99	0.67	0.12	44.49	2.06	32.67	100.37
	TM	**UT1872hm-17**	18.06	0.41	0.03	2.01	0.66	0.11	44.05	2.03	31.02	98.38
		AVERAGE	17.79	0.46	0.05	2.00	0.65	0.16	44.18	2.03	32.03	99.34
		STDEV	0.37	0.17	0.08	0.12	0.06	0.03	0.49	0.17	0.85	0.89
	TM	**UT1872fs-7**	12.51	0.65	0.14	3.07	0.48	0.12	37.87	3.13	41.33	99.30
	TM	**UT1872hm-4**	12.51	0.65	0.09	3.02	0.46	0.17	37.84	3.18	41.29	99.22
		AVERAGE	12.51	0.65	0.12	3.05	0.47	0.15	37.85	3.16	41.31	99.26
		STDEV	0.00	0.00	0.04	0.04	0.01	0.04	0.02	0.04	0.03	0.06
	TM-bad	**UT1872fs-3**	13.56	0.57	0.03	2.64	0.52	0.33	39.03	2.83	38.38	97.89
	TM-bad	**UT1872fs-4**	13.68	0.57	0.03	2.61	0.52	0.18	38.95	2.76	38.28	97.57
	TM-bad	**UT1872fs-5**	14.11	0.61	0.04	2.57	0.53	0.26	39.03	2.61	35.77	95.53
	TM	**UT1872fs-17**	14.91	0.62	0.05	2.74	0.53	0.13	40.46	2.76	36.73	98.93
	TM	**UT1872fs-19**	14.57	0.62	0.04	2.80	0.54	0.15	40.06	2.99	37.96	99.73
	TM	**UT1872hm-3**	14.77	0.59	0.06	2.67	0.54	0.15	40.72	2.78	38.00	100.29
	TM	**UT1872hm-7**	14.43	0.65	0.09	2.70	0.54	0.16	39.76	2.76	36.95	98.04
	TM	**UT1872hm-8**	14.03	0.62	0.09	2.71	0.52	0.17	39.86	2.89	39.21	100.10
	TM	**UT1872hm-14**	14.38	0.62	0.05	2.77	0.53	0.12	39.72	2.89	37.73	98.81
		AVERAGE	14.27	0.61	0.05	2.69	0.53	0.18	39.73	2.81	37.67	98.54
		STDEV	0.46	0.03	0.02	0.08	0.01	0.07	0.64	0.11	1.03	1.49
BT	FI	**UT1884-2**	26.68	0.39	0.09	0.45	0.16	0.05	21.81	1.17	46.76	97.55
	FI	**UT1884-5**	27.68	0.38	0.07	0.48	0.18	0.04	22.67	1.17	47.55	100.22
	FI	**UT1884-6**	27.45	0.42	0.02	0.48	0.21	0.04	22.57	1.11	48.20	100.49
	FI	**UT1884-7**	27.32	0.39	0.04	0.47	0.18	0.02	22.33	1.17	48.35	100.27
	FI	**UT1884-8**	27.43	0.42	0.10	0.50	0.18	0.01	22.45	1.15	48.09	100.34
	FI	**UT1884-9**	27.82	0.42	0.06	0.48	0.19	0.02	22.58	1.28	44.82	97.66
	FI	**UT1884-10**	27.75	0.33	0.11	0.50	0.22	0.01	22.49	1.27	43.60	96.27
	FI	**UT1884-13**	27.47	0.29	0.05	0.47	0.17	0.07	22.54	1.16	46.18	98.40
	FI	**UT1884-15**	27.49	0.37	0.09	0.50	0.16	0.33	22.87	1.17	45.29	98.28

	FI	UT1884-16	27.49	0.40	0.09	0.48	0.18	0.03	22.47	1.19	47.04	99.36
	FI	UT1884-17	27.40	0.40	0.12	0.48	0.16	0.03	22.22	1.29	47.94	100.05
	FI	UT1884-19	27.16	0.42	0.00	0.49	0.18	0.06	22.17	1.20	48.39	100.06
	FI	UT1884-20	27.64	0.40	0.09	0.48	0.18	0.04	22.79	1.09	47.52	100.21
		AVERAGE	27.45	0.38	0.07	0.48	0.18	0.06	22.46	1.19	46.90	99.17
		STDEV	0.29	0.04	0.04	0.01	0.02	0.08	0.28	0.06	1.52	1.38
	TM	UT1884-3	4.39	0.49	0.23	2.51	0.38	0.07	33.12	1.39	57.36	99.94
	TM	UT1884-4	4.40	0.49	0.21	2.54	0.42	0.06	33.43	1.41	58.17	101.13
	TM-bad	UT1884-12	4.78	0.53	0.17	2.57	0.40	0.05	32.56	1.49	55.04	97.59
	TM	UT1884-14	4.64	0.54	0.10	2.44	0.38	0.08	33.21	1.35	56.58	99.32
	TM	UA1080-1	4.34	0.48	0.21	2.55	0.35	0.09	32.26	1.61	56.32	98.21
		AVERAGE	4.51	0.50	0.18	2.52	0.39	0.07	32.92	1.45	56.69	99.24
		STDEV	0.19	0.03	0.05	0.05	0.02	0.02	0.49	0.10	1.17	1.40
CC	FI	UT 1885-3	29.21	0.39	0.14	0.35	0.22	0.05	23.56	1.43	41.34	96.68
	FI	UT 1885-7	27.60	0.44	0.08	0.95	0.21	0.27	21.99	1.66	44.73	97.93
	FI	UT 1885-8	29.48	0.37	0.06	0.49	0.21	0.04	22.80	1.99	43.41	98.84
	FI	UT 1885-9	29.59	0.41	0.05	0.48	0.25	0.05	23.70	1.53	41.72	97.77
	FI	UT 1885-10	29.14	0.41	0.11	0.67	0.19	0.06	22.98	1.74	40.22	95.54
	FI	UT 1885-11	28.74	0.39	0.04	0.47	0.15	0.03	23.11	1.48	43.06	97.47
	FI	UT 1885-12	29.21	0.42	0.06	0.52	0.22	0.02	22.93	1.76	43.62	98.76
	FI	UT 1885-16	28.55	0.40	0.06	0.44	0.22	0.01	22.87	1.46	45.84	99.84
	FI	UT 1885-18	29.65	0.39	0.10	0.41	0.20	0.09	23.73	1.59	43.31	99.45
	FI	UT 1885-19	29.15	0.42	0.08	0.49	0.15	0.04	23.22	1.62	42.73	97.91
	FI	UT 1885-20	29.10	0.41	0.07	0.43	0.19	0.03	23.33	1.51	42.19	97.26
		AVERAGE	29.04	0.40	0.08	0.52	0.20	0.06	23.11	1.62	42.93	97.95
		STDEV	0.58	0.02	0.03	0.17	0.03	0.07	0.50	0.17	1.56	1.24
	TM	UT 1885-6	5.78	0.49	0.23	2.82	0.40	0.07	33.27	2.11	54.58	99.75
	TM	UT 1885-13	5.95	0.53	0.21	2.59	0.40	0.09	33.10	2.31	54.48	99.66
	TM	UT 1885-14	5.71	0.54	0.17	2.32	0.33	0.10	33.72	1.73	54.78	99.40
		AVERAGE	5.82	0.52	0.20	2.58	0.38	0.08	33.36	2.05	54.61	99.61
		STDEV	0.12	0.03	0.03	0.25	0.04	0.02	0.32	0.30	0.15	0.18
	TM	UT 1885-15	23.19	0.46	0.11	1.38	0.48	0.04	50.28	1.09	21.43	98.46

CB1	FI	**UT1881-3**	28.67	0.32	0.16	0.57	0.18	0.05	22.75	1.63	43.81	98.15
	FI	**UT1881-4**	30.39	0.31	0.03	0.48	0.23	0.03	24.21	1.64	41.59	98.91
	FI	**UT1881-5**	28.97	0.31	0.09	0.49	0.20	0.07	23.15	1.57	41.72	96.56
	FI	**UT1881-7**	28.30	0.33	0.04	0.57	0.17	0.03	22.99	1.31	44.49	98.22
	FI	**UT1881-8**	28.72	0.28	0.08	0.52	0.20	0.05	22.78	1.64	43.80	98.07
	FI	**UT1881-9**	29.33	0.36	0.09	0.54	0.19	0.04	23.44	1.57	45.07	100.63
	FI	**UT1881-13**	29.59	0.44	0.05	0.51	0.19	0.02	23.64	1.58	41.25	97.26
	FI	**UT1881-16**	28.88	0.32	0.12	0.56	0.19	0.05	23.28	1.44	42.49	97.32
	FI	**UT1881-17**	28.63	0.31	0.08	0.71	0.19	0.10	22.83	1.60	43.75	98.20
	FI	**UT1881-18**	28.89	0.31	0.12	0.56	0.19	0.04	23.19	1.49	45.01	99.79
	FI	**UT1881-19**	27.18	0.28	0.11	0.48	0.18	0.07	21.66	1.51	44.01	95.47
		AVERAGE	28.87	0.32	0.09	0.54	0.19	0.05	23.08	1.54	43.36	98.05
		STDEV	0.80	0.04	0.04	0.06	0.02	0.02	0.64	0.10	1.37	1.43
	FI-bad	**UA1083-4**	31.82	0.25	0.08	1.10	0.30	0.32	24.45	2.38	36.17	96.87
PrH	MAG	**UA1217fs-1**	0.32	0.34	0.10	0.11	0.06	0.12	31.42	0.02	67.50	99.99
	MAG	**UA1217fs-2**	0.77	0.34	0.11	0.14	0.09	0.10	31.77	0.01	66.54	99.86
		AVERAGE	0.55	0.34	0.11	0.13	0.08	0.11	31.59	0.02	67.02	99.93
		STDEV	0.32	0.00	0.01	0.02	0.02	0.01	0.24	0.01	0.68	0.09
	TM	**UA1217hm-2**	2.02	0.54	0.12	1.36	0.35	0.07	32.15	0.51	62.98	100.10
	TM	**UA1217hm-3**	2.06	0.52	0.13	0.89	0.33	0.12	32.72	0.25	63.51	100.53
	TM	**UA1217hm-20**	2.66	0.65	0.05	1.11	0.27	0.21	33.60	0.08	61.37	100.01
		AVERAGE	2.25	0.57	0.10	1.12	0.32	0.13	32.82	0.28	62.62	100.21
		STDEV	0.36	0.07	0.04	0.24	0.04	0.07	0.73	0.22	1.11	0.28
	TM	**UA1217hm-12**	3.76	0.07	0.00	2.45	0.63	0.11	33.14	0.93	59.22	100.31
	TM	**UA1217hm-13**	3.74	0.09	0.01	2.56	0.65	0.09	32.96	0.97	59.01	100.08
	TM	**UA1217hm-18**	3.78	0.06	0.00	2.54	0.62	0.13	33.07	0.97	58.90	100.07
	TM	**UA1217hm-19**	3.78	0.08	0.02	2.39	0.64	0.08	33.50	0.84	59.83	101.15
	TM	**UA1217hm-25**	3.78	0.08	0.00	2.57	0.63	0.14	33.11	0.93	58.71	99.95
		AVERAGE	3.77	0.08	0.01	2.50	0.63	0.11	33.15	0.93	59.13	100.31
		STDEV	0.02	0.01	0.01	0.08	0.01	0.03	0.20	0.05	0.43	0.49
	TM	**UA1217hm-4**	3.89	0.09	0.01	4.26	0.74	0.10	32.90	1.17	56.57	99.74
	TM	**UA1217hm-5**	4.81	0.09	0.00	4.04	0.84	0.10	34.12	0.92	55.19	100.11
		AVERAGE	4.35	0.09	0.01	4.15	0.79	0.10	33.51	1.05	55.88	99.92

		STDEV	0.65	0.00	0.01	0.16	0.07	0.00	0.86	0.18	0.98	0.26
PrH/MC	TM	**UA1075fs-1**	3.76	0.07	0.00	2.51	0.62	0.10	33.07	0.95	59.08	100.16
mixed	TM	**UA1075fs-2**	3.78	0.08	0.03	2.47	0.65	0.12	32.93	0.94	58.65	99.65
	TM	**UA1075fs-3**	3.78	0.06	0.00	2.52	0.67	0.11	33.19	0.98	59.44	100.74
	TM	**UA1075fs-4**	3.76	0.08	0.00	2.54	0.66	0.12	32.81	1.00	58.63	99.60
	TM	**UA1075fs-12**	3.32	0.41	0.14	1.05	0.15	0.14	33.47	0.23	59.38	98.29
	TM	**UA1075fs-19**	3.71	0.10	0.00	2.53	0.65	0.16	32.82	0.96	58.46	99.40
	TM	**UA1075fs-20**	3.69	0.08	0.00	3.62	0.60	0.13	33.47	0.93	58.21	100.73
	TM	**UA1075hm-1**	3.70	0.06	0.00	2.44	0.62	0.12	33.02	0.89	59.00	99.85
	TM	**UA1075hm-2**	3.70	0.08	0.00	2.55	0.63	0.17	32.96	0.93	58.58	99.60
	TM	**UA1075hm-5**	3.65	0.10	0.00	2.37	0.59	0.09	32.61	0.88	58.39	98.68
	TM	**UA1075hm-10**	3.79	0.08	0.00	2.48	0.61	0.13	33.44	0.91	59.48	100.92
	TM	**UA1075hm-11**	3.72	0.08	0.00	2.33	0.68	0.13	32.95	0.90	59.02	99.81
	TM-bad	**UA1075hm-13**	3.33	0.06	0.00	2.34	0.60	0.16	31.96	0.96	58.29	97.70
	TM	**UA1075hm-14**	3.62	0.09	0.01	2.33	0.58	0.12	33.00	0.85	59.15	99.74
	TM	**UA1075hm-15**	3.70	0.09	0.01	2.41	0.62	0.10	33.02	0.90	59.14	99.99
		AVERAGE	3.67	0.10	0.01	2.43	0.60	0.13	32.98	0.88	58.86	99.66
		STDEV	0.15	0.09	0.04	0.49	0.13	0.02	0.38	0.18	0.43	0.89
	MAG	**UA1075fs-9**	0.29	0.37	0.05	0.33	0.05	0.09	31.52	0.00	67.56	100.26
	MAG	**UA1075fs-10**	0.34	0.38	0.15	0.36	0.08	0.13	31.83	0.00	67.75	101.01
	MAG	**UA1075fs-13**	0.18	0.52	0.05	0.07	0.03	0.12	31.53	0.00	68.08	100.58
	MAG	**UA1075fs-14**	0.09	0.28	0.15	0.15	0.05	0.40	31.01	0.02	65.93	98.07
	MAG	**UA1075fs-15**	0.55	0.29	0.04	0.11	0.14	0.08	31.80	0.00	67.85	100.87
		AVERAGE	0.29	0.37	0.09	0.20	0.07	0.16	31.54	0.00	67.43	100.16
		STDEV	0.17	0.10	0.06	0.13	0.04	0.13	0.33	0.01	0.86	1.20
	TM	**UA1075hm-7**	2.54	0.30	0.15	0.53	0.86	0.08	31.51	1.01	64.07	101.05
	TM	**UA1075hm-8**	2.21	0.28	0.12	0.56	0.79	0.10	30.92	0.96	63.63	99.57
		AVERAGE	2.38	0.29	0.14	0.55	0.83	0.09	31.21	0.99	63.85	100.31
		STDEV	0.23	0.01	0.02	0.02	0.05	0.01	0.41	0.04	0.31	1.04
	TM	**UA1075hm-4**	17.67	0.77	0.05	1.65	0.57	0.14	44.77	1.54	32.04	99.20
SR	TM	**UA1220fs-1**	5.06	0.45	0.03	2.17	0.55	0.14	33.03	1.41	55.35	98.18
	TM	**UA1220fs-2**	5.03	0.43	0.01	2.08	0.59	0.12	33.19	1.42	56.24	99.11

	TM-bad	**UA1220fs-8**	4.98	0.42	0.04	2.03	0.53	0.17	32.95	1.32	55.17	97.61
	TM	**UA1220fs-13**	5.11	0.33	0.01	1.87	0.63	0.22	32.75	1.59	55.61	98.12
	TM	**UA1220hm-5**	5.19	0.42	0.05	2.16	0.54	0.20	33.73	1.35	55.83	99.47
	TM	**UA1220hm-6**	5.18	0.43	0.02	2.16	0.54	0.12	33.84	1.24	56.13	99.66
	TM	**UA1220hm-8**	5.32	0.43	0.01	2.12	0.54	0.15	33.72	1.25	55.25	98.79
	TM	**UA1220hm-9**	5.20	0.45	0.02	2.26	0.56	0.17	33.43	1.29	54.93	98.31
	TM	**UA1220hm-11**	5.17	0.45	0.06	2.18	0.56	0.13	33.38	1.30	55.28	98.52
	TM	**UA1220hm-12**	5.33	0.48	0.02	2.11	0.57	0.16	33.65	1.25	55.03	98.60
	TM	**UA1220hm-13**	5.40	0.39	0.02	1.90	0.62	0.17	33.70	1.42	56.00	99.62
		AVERAGE	5.18	0.43	0.03	2.09	0.57	0.16	33.40	1.35	55.53	98.73
		STDEV	0.13	0.04	0.02	0.12	0.03	0.03	0.37	0.10	0.46	0.67
WRN	TM	**UA1044-3**	6.00	0.37	0.03	6.08	0.30	0.15	35.75	1.41	47.91	97.99
	TM	**UA1044-1**	5.21	0.39	0.02	2.06	0.39	0.06	33.45	1.31	54.29	97.18
	TM	**UA1044-2**	5.28	0.41	0.02	2.22	0.41	0.10	33.65	1.28	52.70	96.06
	TM	**UA1044-4**	4.86	0.37	0.03	2.16	0.37	0.15	32.48	1.49	53.50	95.41
	TM	**UA1044-5**	6.17	0.36	0.02	2.33	0.36	0.11	34.26	1.42	51.10	96.12
	TM	**UA1044-6**	5.77	0.36	0.04	2.23	0.36	0.07	33.50	1.38	51.10	94.80
	TM	**UA1044-7**	5.36	0.39	0.04	2.33	0.39	0.14	32.65	1.60	51.90	94.77
	TM	**UA1044-8**	5.74	0.37	0.10	2.33	0.37	0.06	33.64	1.41	52.70	96.71
	TM	**UA1044-9**	5.55	0.38	0.04	2.31	0.38	0.10	32.88	1.63	52.70	95.95
	TM	**UA1044-10**	5.61	0.36	0.03	2.36	0.36	0.10	33.51	1.72	52.70	96.74
	TM	**UA1044-11**	5.69	0.34	0.02	2.17	0.37	0.06	33.45	1.34	52.70	96.12
	TM	**UA1044-12**	5.72	0.35	0.03	2.22	0.37	0.12	33.94	1.49	51.90	96.14
	TM	**UA1046-m1**	5.77	0.34	0.03	2.29	0.41	0.09	34.10	1.28	53.50	97.80
	TM	**UA1046-m3**	6.18	0.40	0.02	2.56	0.35	0.11	34.30	1.69	51.90	97.51
	TM	**UA1046-m4**	5.49	0.33	0.03	2.12	0.40	0.12	34.20	1.24	52.70	96.62
	TM	**UA1046-m6**	5.46	0.30	0.10	2.00	0.43	0.08	34.92	0.96	54.29	98.54
	TM	**UA1046-m7**	5.31	0.30	0.07	1.92	0.43	0.09	34.24	0.91	53.50	96.76
	TM	**UA1046-m8**	5.72	0.30	0.04	2.08	0.41	0.09	34.98	0.98	52.70	97.28
	TM	**UA1046-m9**	5.87	0.36	0.03	2.27	0.34	0.09	34.30	1.37	52.70	97.32
	TM	**UA1046-m10**	6.05	0.39	0.04	2.47	0.34	0.10	33.85	1.53	51.90	96.67
	TM	**UA1046-m12**	6.07	0.44	0.06	2.47	0.30	0.10	34.63	1.57	51.90	97.54

		AVERAGE	5.64	0.36	0.04	2.24	0.98	0.10	33.85	1.38	52.62	96.60
		STDEV	0.34	0.04	0.02	0.16	0.03	0.02	0.68	0.23	0.89	0.96
	FI	**UA1044-13IL**	34.42	0.44	0.01	0.36	0.31	0.05	28.67	1.82	30.34	96.42
	FI	**UA1044-13IL**	36.70	0.40	0.01	0.26	0.42	0.03	29.84	2.01	27.15	96.82
	FI	**UA1044-13IL**	33.39	0.44	0.01	0.36	0.29	0.06	27.54	1.89	31.94	95.93
	FI	**UA1044-13IL**	33.51	0.47	0.00	0.39	0.29	0.03	27.48	1.65	32.74	96.55
	FI	**UA1044-13IL**	32.65	0.42	0.00	0.39	0.31	0.08	26.53	2.02	33.53	95.93
	FI	**UA1044-13IL**	35.56	0.47	0.01	0.32	0.37	0.04	28.44	2.15	28.74	96.11
	FI	**UA1044-13IL**	37.28	0.38	0.01	0.26	0.42	0.01	29.96	1.97	27.15	97.45
	FI	**UA1044-13IL**	37.05	0.40	0.02	0.27	0.42	0.03	30.05	1.83	27.15	97.20
	FI	**UA1044-13IL**	36.40	0.39	0.01	0.31	0.39	0.05	28.47	2.18	28.74	96.95
	FI	**UA1044-13IL**	36.09	0.39	0.00	0.30	0.38	0.09	28.62	2.12	28.74	96.74
	FI	**UA1046-IL1**	31.82	0.58	0.03	0.36	0.17	0.06	26.01	1.57	36.73	97.32
	FI	**UA1046-IL2**	34.42	0.45	0.01	0.44	0.28	0.34	28.54	2.06	31.94	98.45
	FI	**UA1046-IL5**	33.93	0.46	0.01	0.37	0.27	0.03	27.43	1.89	33.53	97.92
	FI	**UA1046-IL6**	38.77	0.42	0.00	0.20	0.60	0.06	31.93	1.72	23.95	97.64
	FI	**UA1046-IL7**	39.86	0.44	0.01	0.21	0.58	0.03	32.86	2.05	21.56	97.60
	FI	**UA1046-IL8**	35.06	0.41	0.01	0.50	0.44	0.03	26.71	2.49	31.94	97.58
	FI	**UA1046-IL10**	36.28	0.41	0.03	0.23	0.49	0.05	29.06	1.83	26.35	94.72
	FI	**UA1046-IL11**	33.63	0.46	0.01	0.46	0.31	0.06	27.82	1.95	33.53	98.23
	FI	**UA1046-IL12**	33.64	0.45	0.00	0.37	0.27	0.03	27.78	1.78	33.53	97.85
		AVERAGE	35.29	0.44	0.01	0.33	0.37	0.06	28.62	1.95	29.96	97.02
		STDEV	2.10	0.04	0.01	0.08	0.11	0.07	1.74	0.21	3.83	0.93
	ILM	**UA1046-IL3**	49.85	0.49	0.01	0.04	1.00	0.04	44.38	0.14	1.60	97.54
	ILM	**UA1046-IL4**	48.26	0.35	0.00	0.00	4.74	0.01	39.43	0.07	4.79	97.63
	ILM	**UA1046-IL9**	41.23	0.45	0.01	0.19	0.73	0.05	33.39	2.19	19.16	97.40
		AVERAGE	46.44	0.43	0.01	0.08	2.16	0.03	39.07	0.80	8.52	97.53
		STDEV	4.58	0.07	0.01	0.10	2.24	0.02	5.51	1.21	9.36	0.12
WRE	TM	**UA1045-m1**	5.71	0.43	0.04	2.39	0.30	0.05	33.83	1.50	52.70	96.95
	TM	**UA1045-m2**	5.68	0.42	0.04	2.33	0.34	0.07	34.46	1.48	54.29	99.11
	TM	**UA1045-m3**	5.23	0.39	0.05	2.22	0.36	0.09	34.05	1.37	54.29	98.05
	TM	**UA1045-m4**	5.54	0.43	0.03	2.42	0.32	0.11	34.73	1.52	55.09	100.19
	TM	**UA1045-m5**	5.34	0.40	0.04	2.26	0.33	0.08	34.03	1.37	53.50	97.34

TM	**UA1045-m6**	5.67	0.41	0.03	2.47	0.32	0.09	34.14	1.53	53.50	98.14
TM	**UA1045-m7**	4.71	0.40	0.02	1.91	0.36	0.08	33.15	1.12	55.09	96.84
TM	**UA1045-m8**	5.69	0.42	0.04	2.40	0.35	0.07	34.04	1.55	52.70	97.26
TM	**UA1045-m9**	5.68	0.39	0.04	2.43	0.34	0.10	34.17	1.44	52.70	97.27
TM	**UA1045-m10**	5.88	0.42	0.04	2.48	0.34	0.07	34.40	1.49	51.90	97.02
TM	**UA1045-m11**	5.68	0.42	0.06	2.41	0.32	0.10	34.28	1.50	53.50	98.26
TM	**UA1045-m12**	5.58	0.40	0.03	2.34	0.35	0.08	33.92	1.45	52.70	96.84
TM	**UA1119-m1**	5.71	0.42	0.05	2.30	0.33	0.11	34.45	1.50	53.50	98.37
TM	**UA1119-m2**	5.69	0.41	0.03	2.37	0.34	0.08	34.18	1.47	53.50	98.08
TM	**UA1119-m3**	5.66	0.40	0.04	2.37	0.34	0.08	33.75	1.42	53.50	97.55
TM	**UA1119-m4**	5.72	0.39	0.03	2.33	0.34	0.07	34.65	1.50	54.29	99.33
TM	**UA1119-m5**	5.82	0.37	0.04	2.32	0.36	0.05	33.99	1.51	54.29	98.77
TM	**UA1119-m6**	5.63	0.40	0.04	2.33	0.34	0.07	34.58	1.49	53.50	98.37
TM	**UA1119-m7**	6.08	0.44	0.03	2.50	0.34	0.07	35.64	1.57	55.89	102.55
TM	**UA1119-m8**	5.67	0.41	0.02	2.40	0.33	0.11	34.49	1.47	53.50	98.40
TM	**UA1119-m9**	5.79	0.38	0.02	2.39	0.33	0.09	34.00	1.56	53.50	98.06
TM	**UA1119-m10**	5.59	0.42	0.02	2.48	0.33	0.08	33.71	1.54	53.50	97.67
TM	**UA1119-m11**	5.68	0.44	0.04	2.45	0.32	0.07	34.65	1.49	54.29	99.43
TM	**UA1119-m12**	5.38	0.35	0.03	2.27	0.32	0.08	33.63	1.42	54.29	97.77
TM	**UA1120-m-1**	4.16	0.37	0.04	1.76	0.41	0.10	33.44	1.00	57.49	98.75
TM	**UA1120-m2**	5.66	0.43	0.04	2.48	0.33	0.07	34.16	1.48	54.29	98.94
TM	**UA1120-m3**	4.10	0.36	0.04	1.70	0.38	0.07	33.26	1.00	57.49	98.39
TM	**UA1120-m4**	5.65	0.43	0.04	2.47	0.31	0.07	33.90	1.48	53.50	97.84
TM	**UA1121-m1**	5.57	0.39	0.03	2.26	0.32	0.10	34.15	1.43	53.50	97.74
	AVERAGE	5.52	0.40	0.04	2.32	0.34	0.08	34.13	1.44	53.99	98.25
	STDEV	0.45	0.02	0.01	0.20	0.02	0.02	0.49	0.15	1.27	1.17
FI	**UA1045-IL1**	28.03	0.46	0.01	0.40	0.15	0.03	23.11	1.06	44.71	97.95
FI	**UA1045-IL2**	27.71	0.47	0.00	0.33	0.20	0.05	23.40	0.89	44.71	97.77
FI	**UA1045-IL3**	27.45	0.41	0.02	0.32	0.21	0.05	23.60	0.83	45.51	98.39
FI	**UA1045-IL4**	27.85	0.46	0.02	0.35	0.17	0.04	23.41	0.98	43.91	97.19
FI	**UA1045-IL5**	27.85	0.45	0.00	0.35	0.18	0.03	23.74	0.96	43.91	97.48
FI	**UA1045-IL6**	27.57	0.44	0.00	0.34	0.19	0.02	23.35	0.88	44.71	97.50
FI	**UA1045-IL7**	28.24	0.47	0.02	0.39	0.17	0.04	23.46	1.09	43.91	97.81
FI	**UA1045-IL9**	27.79	0.44	0.02	0.35	0.19	0.05	23.78	0.94	43.12	96.67

FI	**UA1045-IL10**	27.87	0.43	0.02	0.35	0.20	0.04	23.32	0.92	43.91	97.07
FI	**UA1045-IL11**	26.71	0.45	0.01	0.32	0.20	0.06	23.23	0.80	44.71	96.49
FI	**UA1045-IL12**	27.18	0.46	0.01	0.32	0.19	0.03	23.56	0.79	44.71	97.25
FI	**UA1119-IL1**	29.83	0.46	0.02	0.44	0.20	0.07	25.36	1.43	39.92	97.74
FI	**UA1119-IL2**	27.77	0.46	0.02	0.46	0.15	0.09	23.09	1.27	43.12	96.42
FI	**UA1119-IL3**	28.93	0.45	0.02	0.44	0.19	0.08	23.47	1.48	42.32	97.37
FI	**UA1119-IL4**	28.29	0.45	0.02	0.45	0.19	0.09	24.22	1.30	41.52	96.53
FI	**UA1119-IL6**	28.60	0.51	0.02	0.59	0.17	0.07	23.65	1.50	41.52	96.61
FI	**UA1119-IL7**	29.74	0.48	0.00	0.43	0.20	0.03	24.65	1.39	40.72	97.65
FI	**UA1119-IL8**	29.38	0.47	0.01	0.44	0.19	0.04	24.77	1.36	42.32	98.98
FI	**UA1119-IL9**	29.36	0.43	0.02	0.42	0.21	0.04	24.57	1.34	41.52	97.90
FI	**UA1119-IL10**	29.07	0.48	0.02	0.45	0.19	0.05	24.74	1.43	41.52	97.94
FI	**UA1119-IL11**	29.75	0.48	0.03	0.45	0.19	0.03	24.40	1.50	41.52	98.33
FI	**UA1119-IL12**	29.62	0.47	0.02	0.39	0.20	0.03	24.25	1.41	41.52	97.91
FI	**UA1120-IL1**	29.01	0.48	0.03	0.45	0.18	0.03	24.71	1.25	42.32	98.45
FI	**UA1120-IL2**	27.47	0.44	0.02	0.36	0.21	0.04	24.04	0.89	44.71	98.17
FI	**UA1120-IL3**	27.03	0.42	0.02	0.34	0.18	0.07	23.87	0.82	44.71	97.45
FI	**UA1120-IL4**	27.48	0.45	0.02	0.35	0.21	0.01	23.43	0.86	45.51	98.33
FI	**UA1120-IL5**	26.76	0.47	0.02	0.31	0.22	0.09	23.25	0.83	46.31	98.26
FI	**UA1120-IL6**	27.19	0.45	0.02	0.29	0.19	0.05	23.62	0.76	45.51	98.07
FI	**UA1120-IL7**	26.84	0.42	0.02	0.32	0.20	0.06	23.26	0.80	46.31	98.23
FI	**UA1120-IL8**	27.34	0.45	0.02	0.34	0.19	0.03	22.93	0.89	46.31	98.51
FI	**UA1120-IL9**	27.03	0.42	0.01	0.34	0.22	0.06	23.05	0.86	46.31	98.29
FI	**UA1120-IL10**	27.54	0.44	0.03	0.39	0.17	0.02	22.97	0.90	43.91	96.37
FI	**UA1120-IL11**	27.87	0.47	0.02	0.41	0.17	0.04	23.56	1.04	44.71	98.28
FI	**UA1121-IL1**	25.91	0.44	0.01	6.95	0.20	0.05	22.38	0.75	43.12	99.80
FI	**UA1121-IL3**	26.28	0.41	0.02	0.39	0.21	0.06	22.80	0.92	45.51	96.60
	AVERAGE	27.95	0.45	0.02	0.57	0.19	0.05	23.69	1.06	43.73	97.71
	STDEV	1.03	0.02	0.01	1.11	0.02	0.02	0.67	0.26	1.78	0.79
FI	**UA1119-IL5**	36.79	0.53	0.05	0.34	0.33	0.06	29.15	2.75	27.15	97.15
ILM	**UA1121-IL2**	49.20	0.45	0.02	0.00	1.49	0.04	42.63	0.13	3.19	97.16

6.2.2. Recalculated Fe^{2+} and [illegible]$^{3+}$

Name	Species	Sample	Ti	V^{3+}	Cr^{3+}	Al^{3+}	Mn^{2+}	Si^{4+}	Fe^{2+}	Mg^{2+}	Fe^{3+}	O^{2-}	Total
CR	ILM	**UT1878fs-8**	32.05	0.14	0.00	0.01	1.61	0.03	34.58	0.27	0.00	31.48	100.76
	ILM	**UT1878fs-9**	32.01	0.16	0.00	0.02	1.56	0.03	34.78	0.26	0.00	31.43	100.93
	ILM	**UT1878fs-10**	31.99	[illegible]	0.00	0.02	1.59	0.02	34.71	0.28	0.00	31.39	100.81
	ILM	**UT1878fs-14**	31.86	0.15	0.03	0.03	1.27	0.02	35.85	0.03	0.15	31.62	101.53
	ILM	**UT1878fs-15**	31.85	0.16	0.02	0.01	1.26	0.03	35.38	0.03	0.00	31.17	100.69
	ILM	**UT1878fs-17**	31.33	0.14	[illegible]	0.02	2.08	0.03	34.13	0.02	0.00	30.99	99.20
		AVERAGE	31.85	0.15	0.01	0.02	1.56	0.03	34.90	0.15	0.02	31.35	100.65
		STDEV	0.27	0.01	0.01	0.01	0.30	0.01	0.61	0.13	0.06	0.23	0.77
	ILM	**UT1878fs-5**	29.45	0.18	0.02	[illegible]	0.46	0.03	29.28	2.04	5.62	31.55	99.30
	ILM	**UT1878fs-6**	29.49	0.19	0.00	0.05	0.43	0.04	29.66	1.91	5.68	31.52	99.67
	ILM	**UT1878fs-12**	30.73	0.19	0.01	0.01	1.47	0.04	34.39	0.02	1.60	31.67	100.14
	ILM	**UA1059-8**	29.48	0.05	0.00	0.03	[illegible]	0.04	32.69	0.52	1.75	30.42	95.54
	ILM	**UA1069-4**	29.77	0.07	0.02	0.06	0.39	0.02	31.04	1.45	3.42	31.46	97.71
		AVERAGE	29.78	0.14	0.01	0.04	0.66	0.03	31.41	1.19	3.61	31.32	98.47
		STDEV	0.55	0.07	0.01	0.02	0.46	[illegible]	2.14	0.89	1.99	0.51	1.88
	ILM	**UA1069-6**	27.62	0.10	0.00	0.03	0.58	0.07	29.83	0.85	7.39	31.06	97.53
	ILM	**UA1069-7**	28.35	0.05	0.00	0.06	0.55	0.01	[illegible]	1.68	7.93	31.93	99.25
	ILM	**UT1878fs-1**	28.45	0.44	0.00	0.06	0.38	0.02	30.35	1.09	7.62	32.09	100.49
	ILM	**UT1878fs-2**	28.31	0.42	0.03	0.05	0.37	0.03	29.94	1.21	8.04	32.15	100.54
		AVERAGE	28.18	0.25	0.01	0.05	0.47	0.03	29.70	[illegible]	7.74	31.81	99.45
		STDEV	0.38	0.21	0.01	0.01	0.11	0.02	0.71	0.35	0.30	0.51	1.42
	FI	**UT1878fs-11**	28.07	0.18	0.01	0.02	1.09	0.02	31.65	0.02	[illegible]	31.74	100.82
	FI	**UT1878fs-13**	27.48	0.20	0.00	0.02	1.10	0.02	30.92	0.03	9.04	31.59	100.40
		AVERAGE	27.78	0.19	0.01	0.02	1.10	0.02	31.28	0.02	8.53	31.67	100.61
		STDEV	0.42	0.01	0.01	0.00	0.01	0.00	0.51	0.01	0.73	[illegible]	0.29
	FI	**UT1878fs-16**	17.63	0.15	0.01	0.31	0.17	0.05	18.70	0.78	30.41	31.18	99.38
	FI	**UA1069-5**	16.59	0.22	0.03	0.38	0.12	0.05	17.31	0.89	32.20	31.01	98.79
	FI	**UA1069-10**	17.10	0.22	0.01	0.32	0.14	0.03	17.79	0.90	32.18	31.42	100.11
	FI	**UA1069-11**	16.77	0.26	0.02	0.34	0.12	0.02	17.55	0.84	32.61	31.30	99.84
		AVERAGE	17.03	0.21	0.02	0.33	0.14	0.04	17.84	0.85	31.85	31.23	99.53

		STDEV	0.46	0.05	0.01	0.03	0.03	0.01	0.61	0.05	0.98	0.17	0.58
	TM	UT1878hm-3	3.60	0.31	0.13	1.17	0.27	0.07	26.52	0.91	37.57	28.15	98.69
	TM	UT1878hm-4	3.49	0.31	0.12	1.25	0.29	0.05	26.45	1.00	38.36	28.51	99.82
	TM bad	UT1878hm-5	3.73	0.36	0.21	0.85	0.29	0.12	26.18	0.74	35.64	27.04	95.17
	TM bad	UT1878hm-6	3.74	0.36	0.23	0.97	0.29	0.12	26.39	0.85	36.19	27.54	96.69
	TM	UT1887hm-8	3.31	0.12	0.02	1.76	0.36	0.08	26.18	1.13	38.39	28.79	100.16
	TM bad	UT1887hm-9	3.36	0.10	0.01	1.44	0.38	0.05	25.88	0.94	37.67	27.97	97.79
		AVERAGE	3.54	0.26	0.12	1.24	0.31	0.08	26.27	0.93	37.31	28.00	98.06
		STDEV	0.18	0.12	0.09	0.33	0.05	0.03	0.24	0.13	1.14	0.64	1.91
GI	TM	UA1242fs-2	8.35	0.40	0.04	1.34	0.41	0.09	30.79	1.63	26.97	28.69	98.72
(ref)	TM	UA1242fs-10	8.18	0.43	0.04	1.45	0.45	0.06	30.34	1.76	27.53	28.86	99.09
	TM	UA1242hm-10	8.59	0.43	0.03	1.44	0.39	0.08	30.76	1.76	26.23	28.69	98.40
	TM	UA1242hm-11	8.59	0.40	0.14	1.44	0.40	0.07	31.38	1.77	27.52	29.46	101.18
	TM	UA1242hm-12	7.82	0.43	0.07	1.50	0.37	0.07	30.18	1.81	28.70	29.16	100.10
	TM	UA1242hm-17	8.49	0.44	0.05	1.44	0.39	0.08	31.12	1.70	27.07	29.06	99.85
		AVERAGE	8.33	0.42	0.06	1.44	0.40	0.08	30.76	1.74	27.34	28.99	99.56
		STDEV	0.30	0.02	0.04	0.05	0.03	0.01	0.46	0.06	0.82	0.30	1.03
	TM	UA1242fs-5	6.71	0.50	0.08	1.77	0.30	0.09	28.71	1.89	30.39	29.05	99.49
	TM	UA1242fs-6	6.65	0.51	0.07	1.81	0.33	0.09	28.93	1.91	31.18	29.46	100.92
	TM	UA1242fs-8	7.05	0.54	0.08	1.71	0.34	0.07	29.23	1.92	30.27	29.35	100.56
	TM	UA1242fs-9	7.03	0.54	0.10	1.73	0.33	0.07	29.26	1.89	30.25	29.34	100.55
	TM	UA1242hm-3	6.60	0.58	0.13	1.91	0.31	0.07	28.43	2.16	31.37	29.66	101.22
	TM	UA1242hm-4	6.59	0.58	0.14	1.86	0.33	0.07	28.26	2.16	31.24	29.50	100.72
	TM	UA1242hm-6	6.78	0.50	0.08	1.82	0.33	0.07	28.55	1.98	30.21	29.08	99.41
		AVERAGE	6.77	0.54	0.10	1.80	0.32	0.08	28.77	1.99	30.70	29.35	100.41
		STDEV	0.20	0.03	0.03	0.07	0.01	0.01	0.39	0.12	0.53	0.22	0.70
	TM	UA1242fs-4	10.63	0.27	0.03	1.05	0.49	0.08	34.45	1.16	22.45	28.71	99.32
	TM	UA1242fs-7	10.38	0.27	0.01	0.96	0.52	0.11	33.84	1.10	22.18	28.15	97.53
	TM	UA1242fs-11	10.69	0.30	0.01	1.02	0.52	0.07	34.50	1.25	22.91	28.99	100.27
	TM	UA1242fs-12	10.76	0.31	0.01	1.01	0.51	0.07	34.87	1.19	23.05	29.14	100.92
	TM	UA1242fs-13	10.75	0.29	0.03	1.00	0.50	0.07	34.54	1.18	22.44	28.76	99.55
	TM	UA1242fs-14	10.93	0.29	0.05	1.06	0.49	0.06	34.80	1.21	22.15	28.90	99.93
	TM-bad	UA1242fs-15	10.45	0.29	0.00	1.03	0.54	0.14	33.68	1.21	21.66	28.11	97.11

	TM	**UA1242fs-16**	10.75	0.30	0.02	1.08	0.50	0.05	34.60	1.24	22.75	29.00	100.29
	TM-bad	**UA1242fs-17**	11.23	0.29	0.01	1.10	0.51	0.06	34.57	1.18	20.12	28.17	97.23
	TM	**UA1242fs-18**	10.81	0.29	0.03	1.00	0.52	0.06	34.90	1.22	23.10	29.21	101.13
	TM	**UA1242fs-19**	10.60	0.30	0.01	1.08	0.49	0.07	34.60	1.30	23.57	29.31	101.31
	TM	**UA1242fs-20**	10.63	0.30	0.01	1.05	0.53	0.08	34.43	1.26	22.96	28.99	100.24
	TM	**UA1242hm-1**	10.65	0.29	0.02	1.05	0.53	0.06	34.39	1.22	22.77	28.87	99.86
	TM	**UA1242hm-2**	10.58	0.31	0.04	1.03	0.50	0.09	34.58	1.21	23.12	29.04	100.50
	TM	**UA1242hm-5**	11.07	0.30	0.03	1.04	0.51	0.06	35.29	1.18	22.36	29.19	101.02
	TM	**UA1242hm-7**	10.66	0.31	0.02	1.02	0.51	0.09	34.72	1.19	23.02	29.06	100.61
	TM	**UA1242hm-9**	10.51	0.29	0.01	1.05	0.50	0.07	34.38	1.26	23.44	29.08	100.60
	TM-bad	**UA1242hm-13**	10.97	0.32	0.00	1.11	0.46	0.06	34.41	1.18	20.84	28.26	97.60
	TM	**UA1242hm-14**	11.38	0.33	0.01	1.04	0.50	0.06	35.31	1.16	20.89	28.76	99.42
	TM	**UA1242hm-15**	10.61	0.30	0.01	1.06	0.52	0.07	34.37	1.26	22.96	28.96	100.13
	TM	**UA1242hm-16**	10.68	0.27	0.01	1.04	0.50	0.07	34.70	1.13	22.70	28.87	99.99
		AVERAGE	10.75	0.30	0.02	1.04	0.51	0.07	34.57	1.20	22.45	28.83	99.74
		STDEV	0.25	0.01	0.01	0.04	0.02	0.02	0.38	0.05	0.90	0.36	1.30
GI	TM	**UT1872fs-1**	10.45	0.29	0.01	1.08	0.52	0.10	34.04	1.18	22.43	28.52	98.62
(new)	TM	**UT1872fs-2**	10.44	0.27	0.03	0.99	0.50	0.10	34.01	1.17	22.55	28.46	98.53
	TM	**UT1872fs-6**	10.45	0.26	0.03	1.05	0.50	0.12	33.97	1.19	22.16	28.38	98.10
	TM	**UT1872fs-8**	10.23	0.27	0.00	1.05	0.52	0.08	33.67	1.23	23.18	28.56	98.80
	TM	**UT1872fs-9**	10.37	0.28	0.02	1.04	0.49	0.08	34.05	1.20	23.04	28.68	99.26
	TM	**UT1872fs-10**	10.31	0.29	0.01	1.07	0.50	0.08	33.70	1.26	22.85	28.53	98.61
	TM	**UT1872fs-11**	10.63	0.31	0.03	1.05	0.53	0.07	34.41	1.21	22.76	28.87	99.87
	TM	**UT1872fs-12**	10.58	0.31	0.02	1.06	0.52	0.08	34.32	1.21	22.66	28.78	99.54
	TM	**UT1872fs-13**	10.45	0.28	0.02	1.05	0.53	0.07	33.94	1.19	22.63	28.53	98.70
	TM	**UT1872fs-14**	10.69	0.30	0.03	1.02	0.51	0.07	34.38	1.22	22.54	28.77	99.54
	TM	**UT1872fs-15**	10.64	0.30	0.00	1.08	0.51	0.07	34.25	1.25	22.46	28.74	99.31
	TM	**UT1872fs-16**	10.75	0.29	0.01	1.04	0.51	0.07	34.88	1.19	23.00	29.15	100.90
	TM	**UT1872fs-18**	10.94	0.86	0.29	1.34	0.28	0.07	34.14	1.70	21.01	29.14	99.77
	TM	**UT1872hm-1**	10.75	0.29	0.02	1.06	0.51	0.07	34.64	1.25	22.85	29.07	100.51
	TM	**UT1872hm-2**	10.85	0.30	0.03	1.04	0.53	0.07	34.86	1.21	22.67	29.09	100.64
	TM	**UT1872hm-5**	10.75	0.29	0.03	1.07	0.52	0.07	34.40	1.22	22.24	28.73	99.30
	TM	**UT1872hm-6**	10.69	0.29	0.03	1.03	0.52	0.08	34.82	1.20	23.20	29.18	101.03

	TM	UT1872hm-9	10.88	0.31	0.01	1.00	0.51	0.07	34.59	1.16	21.83	28.59	98.96
	TM	UT1872hm-10	10.85	0.29	0.01	1.04	0.52	0.07	34.67	1.18	22.16	28.78	99.57
	TM	UT1872hm-11	11.02	0.31	0.09	1.11	0.47	0.08	34.89	1.16	21.23	28.66	99.03
	TM	UT1872hm-12	10.84	0.29	0.02	1.04	0.50	0.07	34.70	1.22	22.40	28.91	99.99
	TM bad	UT1872hm-13	10.39	0.24	0.00	1.02	0.51	0.10	33.75	1.18	22.28	28.26	97.74
	TM	UT1872hm-15	10.97	0.28	0.05	1.03	0.51	0.07	34.57	1.17	21.34	28.47	98.46
	TM	UT1872hm-16	10.74	0.31	0.00	1.05	0.52	0.06	34.58	1.24	22.85	29.02	100.37
	TM	UT1872hm-17	10.82	0.28	0.02	1.06	0.51	0.05	34.24	1.22	21.69	28.47	98.38
		AVERAGE	10.66	0.31	0.03	1.06	0.50	0.08	34.34	1.23	22.40	28.73	99.34
		STDEV	0.22	0.12	0.06	0.06	0.05	0.02	0.38	0.10	0.59	0.26	0.89
	TM	UT1872fs-7	7.50	0.44	0.10	1.62	0.37	0.06	29.43	1.89	28.91	28.98	99.30
	TM	UT1872hm-4	7.50	0.44	0.06	1.60	0.36	0.08	29.41	1.92	28.88	28.97	99.22
		AVERAGE	7.50	0.44	0.08	1.61	0.36	0.07	29.42	1.90	28.90	28.97	99.26
		STDEV	0.00	0.00	0.02	0.02	0.01	0.02	0.01	0.02	0.02	0.01	0.06
	TM-bad	UT1872fs-3	8.13	0.39	0.02	1.40	0.40	0.15	30.34	1.71	26.85	28.51	97.89
	TM-bad	UT1872fs-4	8.20	0.39	0.02	1.38	0.40	0.08	30.27	1.66	26.77	28.39	97.57
	TM-bad	UT1872fs-5	8.46	0.41	0.03	1.36	0.41	0.12	30.34	1.57	25.02	27.81	95.53
	TM	UT1872fs-17	8.94	0.42	0.03	1.45	0.41	0.06	31.45	1.66	25.69	28.81	98.93
	TM	UT1872fs-19	8.73	0.42	0.03	1.48	0.42	0.07	31.14	1.80	26.55	29.09	99.73
	TM	UT1872hm-3	8.85	0.40	0.04	1.41	0.42	0.07	31.65	1.68	26.58	29.18	100.29
	TM	UT1872hm-7	8.65	0.44	0.06	1.43	0.42	0.07	30.91	1.66	25.85	28.55	98.04
	TM	UT1872hm-8	8.41	0.42	0.06	1.43	0.40	0.08	30.98	1.74	27.42	29.14	100.10
	TM	UT1872hm-14	8.62	0.42	0.03	1.47	0.41	0.06	30.87	1.74	26.39	28.80	98.81
		AVERAGE	8.55	0.41	0.04	1.42	0.41	0.09	30.88	1.69	26.35	28.70	98.54
		STDEV	0.28	0.02	0.02	0.04	0.01	0.03	0.49	0.07	0.72	0.44	1.49
BT	FI	UT1884-2	15.99	0.26	0.06	0.24	0.12	0.02	16.95	0.71	32.71	30.49	97.55
	FI	UT1884-5	16.59	0.26	0.05	0.26	0.14	0.02	17.62	0.70	33.26	31.33	100.22
	FI	UT1884-6	16.45	0.28	0.01	0.25	0.16	0.02	17.54	0.67	33.72	31.39	100.49
	FI	UT1884-7	16.37	0.27	0.03	0.25	0.14	0.01	17.36	0.71	33.81	31.32	100.27
	FI	UT1884-8	16.44	0.28	0.07	0.27	0.14	0.01	17.45	0.70	33.64	31.35	100.34
	FI	UT1884-9	16.68	0.28	0.04	0.25	0.15	0.01	17.55	0.77	31.35	30.58	97.66
	FI	UT1884-10	16.63	0.23	0.08	0.26	0.17	0.00	17.48	0.76	30.49	30.16	96.27
	FI	UT1884-13	16.46	0.20	0.04	0.25	0.13	0.03	17.52	0.70	32.30	30.77	98.40

	FI	UT1884-15	16.48	0.25	0.06	0.27	0.13	0.15	17.78	0.70	31.68	30.78	98.28
	FI	UT1884-16	16.48	0.27	0.06	0.26	0.14	0.01	17.46	0.72	32.90	31.06	99.36
	FI	UT1884-17	16.42	0.27	0.08	0.26	0.13	0.01	17.27	0.78	33.53	31.30	100.05
	FI	UT1884-19	16.28	0.28	0.00	0.26	0.14	0.03	17.23	0.72	33.84	31.27	100.06
	FI	UT1884-20	16.56	0.27	0.06	0.26	0.14	0.02	17.71	0.65	33.23	31.30	100.21
		AVERAGE	16.45	0.26	0.05	0.25	0.14	0.03	17.46	0.71	32.80	31.01	99.17
		STDEV	0.17	0.03	0.02	0.01	0.01	0.04	0.22	0.04	1.06	0.41	1.38
	TM	UT1884-3	2.63	0.33	0.16	1.33	0.29	0.03	25.74	0.84	40.12	28.46	99.94
	TM	UT1884-4	2.64	0.33	0.14	1.35	0.32	0.03	25.98	0.85	40.69	28.80	101.13
	TM-bad	UT1884-12	2.87	0.36	0.12	1.36	0.31	0.02	25.31	0.90	38.50	27.85	97.59
	TM	UT1884-14	2.78	0.36	0.07	1.29	0.30	0.04	25.81	0.82	39.57	28.28	99.32
	TM	UA1080-1	2.60	0.32	0.15	1.35	0.27	0.04	25.08	0.97	39.39	28.04	98.21
		AVERAGE	2.70	0.34	0.13	1.33	0.30	0.03	25.59	0.88	39.65	28.28	99.24
		STDEV	0.12	0.02	0.04	0.03	0.02	0.01	0.38	0.06	0.82	0.37	1.40
CC	FI	UT 1885-3	17.51	0.27	0.09	0.18	0.17	0.02	18.31	0.86	28.91	30.35	96.68
	FI	UT 1885-7	16.54	0.30	0.05	0.50	0.16	0.13	17.09	1.00	31.29	30.86	97.93
	FI	UT 1885-8	17.67	0.25	0.04	0.26	0.16	0.02	17.72	1.20	30.36	31.16	98.84
	FI	UT 1885-9	17.73	0.28	0.03	0.25	0.19	0.03	18.42	0.92	29.18	30.73	97.77
	FI	UT 1885-10	17.47	0.28	0.08	0.36	0.15	0.03	17.86	1.05	28.13	30.13	95.54
	FI	UT 1885-11	17.23	0.26	0.03	0.25	0.11	0.02	17.97	0.89	30.12	30.60	97.47
	FI	UT 1885-12	17.50	0.28	0.04	0.28	0.17	0.01	17.83	1.06	30.51	31.08	98.76
	FI	UT 1885-16	17.11	0.27	0.04	0.23	0.17	0.00	17.78	0.88	32.06	31.29	99.84
	FI	UT 1885-18	17.77	0.27	0.06	0.21	0.16	0.04	18.45	0.96	30.29	31.25	99.45
	FI	UT 1885-19	17.47	0.29	0.06	0.26	0.12	0.02	18.05	0.98	29.89	30.79	97.91
	FI	UT 1885-20	17.44	0.28	0.05	0.23	0.15	0.01	18.13	0.91	29.51	30.55	97.26
		AVERAGE	17.40	0.27	0.05	0.27	0.16	0.03	17.96	0.97	30.02	30.80	97.95
		STDEV	0.35	0.01	0.02	0.09	0.02	0.03	0.39	0.10	1.09	0.38	1.24
	TM	UT 1885-6	3.47	0.33	0.16	1.49	0.31	0.03	25.86	1.27	38.18	28.65	99.75
	TM	UT 1885-13	3.57	0.36	0.14	1.37	0.31	0.04	25.73	1.39	38.11	28.64	99.66
	TM	UT 1885-14	3.42	0.37	0.11	1.23	0.26	0.05	26.21	1.04	38.31	28.40	99.40
		AVERAGE	3.49	0.35	0.14	1.36	0.29	0.04	25.93	1.23	38.20	28.56	99.61
		STDEV	0.07	0.02	0.02	0.13	0.03	0.01	0.25	0.18	0.10	0.15	0.18
	TM	UT 1885-15	13.90	0.31	0.07	0.73	0.37	0.02	39.09	0.66	14.99	28.32	98.46

CB1	FI	**UT1881-3**	17.18	0.22	0.11	0.30	0.14	0.02	17.68	0.98	30.64	30.86	98.15
	FI	**UT1881-4**	18.21	0.21	0.02	0.25	0.18	0.01	18.82	0.99	29.09	31.12	98.91
	FI	**UT1881-5**	17.36	0.21	0.06	0.26	0.15	0.03	17.99	0.94	29.18	30.36	96.56
	FI	**UT1881-7**	16.96	0.22	0.03	0.30	0.13	0.01	17.87	0.79	31.12	30.79	98.22
	FI	**UT1881-8**	17.21	0.19	0.05	0.28	0.15	0.02	17.71	0.99	30.64	30.83	98.07
	FI	**UT1881-9**	17.58	0.24	0.06	0.29	0.15	0.02	18.22	0.95	31.52	31.60	100.63
	FI	**UT1881-13**	17.73	0.30	0.03	0.27	0.15	0.01	18.38	0.95	28.85	30.59	97.26
	FI	**UT1881-16**	17.31	0.21	0.08	0.30	0.14	0.02	18.09	0.87	29.72	30.57	97.32
	FI	**UT1881-17**	17.16	0.21	0.05	0.37	0.15	0.05	17.75	0.96	30.60	30.89	98.20
	FI	**UT1881-18**	17.32	0.21	0.08	0.30	0.15	0.02	18.02	0.90	31.48	31.32	99.79
	FI	**UT1881-19**	16.29	0.19	0.07	0.25	0.14	0.03	16.84	0.91	30.78	29.96	95.47
		AVERAGE	17.30	0.22	0.06	0.29	0.15	0.02	17.94	0.93	30.33	30.81	98.05
		STDEV	0.48	0.03	0.03	0.03	0.01	0.01	0.50	0.06	0.96	0.45	1.43
	FI-bad	**UA1083-4**	19.07	0.17	0.05	0.58	0.23	0.15	19.01	1.44	25.30	30.87	96.87
PrH	MAG	**UA1217fs-1**	0.19	0.23	0.07	0.06	0.05	0.06	24.43	0.01	47.21	27.69	99.99
	MAG	**UA1217fs-2**	0.46	0.23	0.08	0.07	0.07	0.05	24.69	0.01	46.54	27.67	99.86
		AVERAGE	0.33	0.23	0.07	0.07	0.06	0.05	24.56	0.01	46.87	27.68	99.93
		STDEV	0.19	0.00	0.00	0.01	0.02	0.01	0.19	0.00	0.47	0.02	0.09
	TM	**UA1217hm-2**	1.21	0.37	0.08	0.72	0.27	0.03	24.99	0.31	44.05	28.07	100.10
	TM	**UA1217hm-3**	1.23	0.35	0.09	0.47	0.26	0.06	25.44	0.15	44.42	28.06	100.53
	TM	**UA1217hm-20**	1.59	0.44	0.03	0.59	0.21	0.10	26.12	0.05	42.93	27.95	100.01
		AVERAGE	1.35	0.39	0.07	0.59	0.25	0.06	25.52	0.17	43.80	28.03	100.21
		STDEV	0.21	0.05	0.03	0.12	0.03	0.03	0.57	0.13	0.78	0.07	0.28
	TM	**UA1217hm-12**	2.25	0.05	0.00	1.30	0.49	0.05	25.76	0.56	41.42	28.43	100.31
	TM	**UA1217hm-13**	2.24	0.06	0.01	1.35	0.50	0.04	25.62	0.58	41.27	28.39	100.08
	TM	**UA1217hm-18**	2.27	0.04	0.00	1.34	0.48	0.06	25.71	0.58	41.19	28.39	100.07
	TM	**UA1217hm-19**	2.27	0.05	0.01	1.26	0.50	0.04	26.04	0.51	41.84	28.63	101.15
	TM	**UA1217hm-25**	2.27	0.05	0.00	1.36	0.49	0.07	25.73	0.56	41.07	28.36	99.95
		AVERAGE	2.26	0.05	0.00	1.32	0.49	0.05	25.77	0.56	41.36	28.44	100.31
		STDEV	0.01	0.01	0.01	0.04	0.01	0.01	0.16	0.03	0.30	0.11	0.49
	TM	**UA1217hm-4**	2.33	0.06	0.01	2.25	0.57	0.05	25.58	0.71	39.57	28.61	99.74
	TM	**UA1217hm-5**	2.88	0.06	0.00	2.14	0.65	0.05	26.52	0.55	38.60	28.65	100.11

		AVERAGE	2.61	0.06	0.00	2.20	0.61	0.05	26.05	0.63	39.08	28.63	99.92
		STDEV	0.39	0.00	0.00	0.08	0.05	0.00	0.67	0.11	0.69	0.03	0.26
PrH/MC mixed	TM	**UA1075fs-1**	2.25	0.05	0.00	1.33	0.48	0.05	25.70	0.57	41.32	28.40	100.16
	TM	**UA1075fs-2**	2.27	0.05	0.02	1.31	0.50	0.06	25.60	0.57	41.02	28.26	99.65
	TM	**UA1075fs-3**	2.27	0.04	0.00	1.33	0.52	0.05	25.80	0.59	41.57	28.57	100.74
	TM	**UA1075fs-4**	2.25	0.05	0.00	1.34	0.51	0.06	25.50	0.60	41.01	28.27	99.60
	TM	**UA1075fs-12**	1.99	0.28	0.10	0.56	0.12	0.07	26.01	0.14	41.53	27.50	98.29
	TM	**UA1075fs-19**	2.22	0.07	0.00	1.34	0.50	0.07	25.51	0.58	40.89	28.20	99.40
	TM	**UA1075fs-20**	2.21	0.05	0.00	1.92	0.46	0.06	26.01	0.56	40.72	28.73	100.73
	TM	**UA1075hm-1**	2.22	0.04	0.00	1.29	0.48	0.06	25.67	0.54	41.26	28.29	99.85
	TM	**UA1075hm-2**	2.22	0.05	0.00	1.35	0.49	0.08	25.62	0.56	40.97	28.26	99.60
	TM	**UA1075hm-5**	2.19	0.07	0.00	1.25	0.46	0.04	25.34	0.53	40.84	27.95	98.68
	TM	**UA1075hm-10**	2.27	0.05	0.00	1.31	0.47	0.06	25.99	0.55	41.60	28.60	100.92
	TM	**UA1075hm-11**	2.23	0.05	0.00	1.23	0.53	0.06	25.61	0.54	41.28	28.27	99.81
	TM-bad	**UA1075hm-13**	2.00	0.04	0.00	1.24	0.46	0.07	24.84	0.58	40.77	27.69	97.70
	TM	**UA1075hm-14**	2.17	0.06	0.01	1.23	0.45	0.06	25.65	0.51	41.37	28.24	99.74
	TM	**UA1075hm-15**	2.22	0.06	0.01	1.28	0.48	0.05	25.67	0.54	41.37	28.33	99.99
		AVERAGE	2.20	0.07	0.01	1.29	0.46	0.06	25.64	0.53	41.17	28.24	99.66
		STDEV	0.09	0.06	0.02	0.26	0.10	0.01	0.29	0.11	0.30	0.32	0.89
	MAG	**UA1075fs-9**	0.17	0.25	0.03	0.17	0.04	0.04	24.50	0.00	47.25	27.79	100.26
	MAG	**UA1075fs-10**	0.20	0.26	0.10	0.19	0.06	0.06	24.74	0.00	47.38	28.01	101.01
	MAG	**UA1075fs-13**	0.11	0.35	0.03	0.04	0.02	0.06	24.51	0.00	47.61	27.84	100.58
	MAG	**UA1075fs-14**	0.05	0.19	0.10	0.08	0.04	0.19	24.10	0.01	46.11	27.20	98.07
	MAG	**UA1075fs-15**	0.33	0.20	0.03	0.06	0.11	0.04	24.72	0.00	47.46	27.93	100.87
		AVERAGE	0.17	0.25	0.06	0.11	0.05	0.08	24.51	0.00	47.16	27.75	100.16
		STDEV	0.10	0.07	0.04	0.07	0.03	0.06	0.26	0.01	0.60	0.32	1.20
	TM	**UA1075hm-7**	1.52	0.20	0.10	0.28	0.67	0.04	24.49	0.61	44.81	28.32	101.05
	TM	**UA1075hm-8**	1.32	0.19	0.08	0.30	0.61	0.05	24.03	0.58	44.51	27.90	99.57
		AVERAGE	1.42	0.20	0.09	0.29	0.64	0.04	24.26	0.59	44.66	28.11	100.31
		STDEV	0.14	0.01	0.01	0.01	0.04	0.01	0.32	0.02	0.22	0.30	1.04
	TM	**UA1075hm-4**	10.59	0.52	0.03	0.87	0.44	0.07	34.80	0.93	22.41	28.53	99.20
SR	TM	**UA1220fs-1**	3.03	0.31	0.02	1.15	0.43	0.07	25.67	0.85	38.71	27.95	98.18

	TM	**UA1220fs-2**	3.01	0.29	0.01	1.10	0.46	0.06	25.80	0.86	39.34	28.19	99.11
	TM-bad	**UA1220fs-8**	2.98	0.29	0.03	1.07	0.41	0.08	25.61	0.80	38.59	27.75	97.61
	TM	**UA1220fs-13**	3.06	0.22	0.01	0.99	0.49	0.10	25.46	0.96	38.90	27.93	98.12
	TM	**UA1220hm-5**	3.11	0.29	0.03	1.14	0.42	0.09	26.22	0.81	39.05	28.30	99.47
	TM	**UA1220hm-6**	3.10	0.29	0.01	1.14	0.42	0.06	26.31	0.75	39.26	28.32	99.66
	TM	**UA1220hm-8**	3.19	0.29	0.01	1.12	0.42	0.07	26.21	0.75	38.65	28.08	98.79
	TM	**UA1220hm-9**	3.12	0.31	0.01	1.20	0.43	0.08	25.98	0.78	38.42	27.98	98.31
	TM	**UA1220hm-11**	3.10	0.31	0.04	1.15	0.43	0.06	25.95	0.78	38.67	28.02	98.52
	TM	**UA1220hm-12**	3.19	0.33	0.01	1.12	0.44	0.07	26.16	0.75	38.49	28.03	98.60
	TM	**UA1220hm-13**	3.24	0.27	0.01	1.01	0.48	0.08	26.19	0.86	39.17	28.32	99.62
		AVERAGE	3.10	0.29	0.02	1.11	0.44	0.07	25.96	0.81	38.84	28.08	98.73
		STDEV	0.08	0.03	0.01	0.06	0.03	0.01	0.29	0.06	0.32	0.18	0.67
WRN	TM	**UA1044-3**	3.59	0.25	0.02	3.22	0.23	0.07	27.79	0.85	33.51	28.46	97.99
	TM	**UA1044-1**	3.13	0.20	0.01	1.09	0.30	0.03	26.00	0.79	37.98	27.57	97.09
	TM	**UA1044-2**	3.17	0.19	0.02	1.17	0.31	0.05	26.16	0.77	36.86	27.24	95.94
	TM	**UA1044-4**	2.91	0.20	0.02	1.14	0.29	0.07	25.25	0.90	37.42	27.14	95.33
	TM	**UA1044-5**	3.70	0.25	0.02	1.23	0.28	0.05	26.63	0.86	35.74	27.38	96.13
	TM	**UA1044-6**	3.46	0.24	0.03	1.18	0.27	0.03	26.04	0.83	35.74	26.97	94.80
	TM	**UA1044-7**	3.21	0.23	0.02	1.23	0.30	0.06	25.38	0.96	36.30	27.02	94.73
	TM	**UA1044-8**	3.44	0.23	0.07	1.23	0.28	0.03	26.15	0.85	36.86	27.54	96.68
	TM	**UA1044-9**	3.33	0.23	0.03	1.22	0.29	0.05	25.56	0.98	36.86	27.38	95.91
	TM	**UA1044-10**	3.36	0.25	0.02	1.25	0.28	0.04	26.04	1.03	36.86	27.60	96.74
	TM	**UA1044-11**	3.41	0.23	0.01	1.15	0.29	0.03	26.00	0.81	36.86	27.35	96.12
	TM	**UA1044-12**	3.43	0.24	0.02	1.17	0.29	0.06	26.38	0.90	36.30	27.36	96.14
	TM	**UA1046-m1**	3.46	0.23	0.02	1.21	0.32	0.04	0.00	0.77	37.42	54.33	97.80
	TM	**UA1046-m3**	3.70	0.27	0.01	1.36	0.27	0.05	26.66	1.02	36.30	27.86	97.51
	TM	**UA1046-m4**	3.29	0.23	0.02	1.12	0.31	0.06	26.58	0.75	36.86	27.41	96.62
	TM	**UA1046-m6**	3.27	0.20	0.07	1.06	0.33	0.04	27.14	0.58	37.98	27.87	98.54
	TM	**UA1046-m7**	3.18	0.21	0.04	1.02	0.33	0.04	26.62	0.55	37.42	27.36	96.76
	TM	**UA1046-m8**	3.43	0.21	0.02	1.10	0.32	0.04	26.63	0.59	37.42	27.61	97.36
	TM	**UA1046-m9**	3.52	0.24	0.02	1.20	0.26	0.04	26.66	0.83	36.86	27.69	97.32
	TM	**UA1046-m10**	3.63	0.26	0.03	1.31	0.26	0.04	26.31	0.92	36.30	27.60	96.67

	TM	UA1046-m12	3.64	0.30	0.04	1.31	0.23	0.05	26.92	0.95	36.30	27.81	97.54
		AVERAGE	3.38	0.23	0.03	1.19	0.29	0.04	24.96	0.83	36.83	28.80	96.59
		STDEV	0.20	0.03	0.02	0.09	0.02	0.01	5.89	0.14	0.64	6.01	0.98
	FI	UA1044-13IL	20.63	0.30	0.01	0.19	0.24	0.02	22.29	1.10	21.22	30.42	96.42
	FI	UA1044-13IL	22.00	0.27	0.00	0.14	0.33	0.01	23.19	1.21	18.99	30.67	96.82
	FI	UA1044-13IL	20.01	0.30	0.01	0.19	0.23	0.03	21.41	1.14	22.34	30.27	95.93
	FI	UA1044-13IL	20.09	0.32	0.00	0.20	0.22	0.01	21.36	0.99	22.90	30.45	96.55
	FI	UA1044-13IL	19.57	0.28	0.00	0.21	0.24	0.04	20.62	1.22	23.46	30.30	95.93
	FI	UA1044-13IL	21.31	0.32	0.01	0.17	0.29	0.02	22.11	1.30	20.10	30.48	96.11
	FI	UA1044-13IL	22.34	0.26	0.01	0.14	0.33	0.01	23.29	1.19	18.99	30.90	97.45
	FI	UA1044-13IL	22.20	0.27	0.01	0.14	0.32	0.01	23.36	1.10	18.99	30.79	97.20
	FI	UA1044-13IL	21.81	0.26	0.01	0.16	0.30	0.02	22.13	1.32	20.10	30.82	96.95
	FI	UA1044-13IL	21.63	0.27	0.00	0.16	0.30	0.04	22.25	1.28	20.10	30.72	96.74
	FI	UA1046-IL1	19.07	0.39	0.02	0.19	0.13	0.03	20.22	0.95	25.69	30.64	97.32
	FI	UA1046-IL2	20.63	0.31	0.00	0.23	0.21	0.16	22.18	1.24	22.34	31.15	98.45
	FI	UA1046-IL5	20.33	0.31	0.01	0.20	0.21	0.01	21.32	1.14	23.46	30.93	97.92
	FI	UA1046-IL6	23.23	0.29	0.00	0.10	0.46	0.03	24.82	1.03	16.75	30.92	97.64
	FI	UA1046-IL7	23.89	0.30	0.01	0.11	0.45	0.02	25.54	1.23	15.08	30.97	97.60
	FI	UA1046-IL8	21.01	0.28	0.00	0.26	0.34	0.01	20.76	1.50	22.34	31.07	97.58
	FI	UA1046-IL10	21.74	0.28	0.02	0.12	0.38	0.02	22.59	1.10	18.43	30.04	94.72
	FI	UA1046-IL11	20.16	0.31	0.01	0.24	0.24	0.03	21.62	1.17	23.46	30.99	98.23
	FI	UA1046-IL12	20.16	0.30	0.00	0.20	0.21	0.01	21.60	1.07	23.46	30.85	97.85
		AVERAGE	21.15	0.30	0.01	0.18	0.29	0.03	22.24	1.17	20.96	30.70	97.02
		STDEV	1.26	0.03	0.01	0.04	0.08	0.03	1.35	0.13	2.68	0.30	0.93
	ILM	UA1046-IL3	29.87	0.33	0.01	0.02	0.77	0.02	34.50	0.09	1.12	30.81	97.54
	ILM	UA1046-IL4	28.92	0.24	0.00	0.00	3.67	0.00	30.65	0.04	3.35	30.76	97.63
	ILM	UA1046-IL9	24.71	0.31	0.01	0.10	0.56	0.02	25.95	1.32	13.40	31.01	97.40
		AVERAGE	27.84	0.29	0.00	0.04	1.67	0.01	30.37	0.48	5.96	30.86	97.53
		STDEV	2.75	0.05	0.00	0.05	1.74	0.01	4.28	0.73	6.54	0.13	0.12
WRE	TM	UA1045-m1	3.42	0.29	0.03	1.26	0.23	0.02	26.30	0.90	36.86	27.62	96.95
	TM	UA1045-m2	3.40	0.29	0.03	1.23	0.26	0.03	26.79	0.89	37.98	28.21	99.11
	TM	UA1045-m3	3.13	0.27	0.03	1.18	0.28	0.04	26.47	0.83	37.98	27.85	98.05
	TM	UA1045-m4	3.32	0.29	0.02	1.28	0.25	0.05	26.99	0.92	38.53	28.53	100.19

TM	**UA1045-m5**	3.20	0.27	0.03	1.20	0.26	0.04	26.45	0.82	37.42	27.66	97.34
TM	**UA1045-m6**	3.40	0.28	0.02	1.31	0.24	0.04	26.54	0.92	37.42	27.98	98.14
TM	**UA1045-m7**	2.82	0.27	0.02	1.01	0.28	0.04	25.77	0.67	38.53	27.43	96.84
TM	**UA1045-m8**	3.41	0.29	0.03	1.27	0.27	0.03	26.46	0.93	36.86	27.71	97.26
TM	**UA1045-m9**	3.40	0.26	0.02	1.29	0.26	0.05	26.56	0.87	36.86	27.70	97.27
TM	**UA1045-m10**	3.52	0.28	0.03	1.31	0.26	0.03	26.18	0.90	36.86	27.72	97.10
TM	**UA1045-m11**	3.40	0.29	0.04	1.28	0.25	0.05	26.64	0.90	37.42	27.99	98.26
TM	**UA1045-m12**	3.35	0.27	0.02	1.24	0.27	0.04	0.00	0.87	36.86	53.93	96.84
TM	**UA1119-m1**	3.42	0.29	0.03	1.22	0.25	0.05	26.78	0.90	37.42	28.00	98.37
TM	**UA1119-m2**	3.41	0.28	0.02	1.26	0.27	0.04	26.57	0.89	37.42	27.93	98.08
TM	**UA1119-m3**	3.39	0.27	0.03	1.26	0.26	0.04	26.23	0.86	37.42	27.80	97.55
TM	**UA1119-m4**	3.43	0.27	0.02	1.23	0.26	0.03	26.93	0.91	37.98	28.27	99.33
TM	**UA1119-m5**	3.49	0.25	0.03	1.23	0.28	0.02	26.42	0.91	37.98	28.16	98.77
TM	**UA1119-m6**	3.38	0.27	0.02	1.23	0.26	0.03	26.88	0.90	37.42	27.98	98.37
TM	**UA1119-m7**	3.64	0.30	0.02	1.32	0.26	0.03	27.70	0.95	39.09	29.23	102.55
TM	**UA1119-m8**	3.40	0.28	0.01	1.27	0.25	0.05	26.81	0.89	37.42	28.02	98.40
TM	**UA1119-m9**	3.47	0.26	0.02	1.26	0.26	0.04	26.43	0.94	37.42	27.97	98.06
TM	**UA1119-m10**	3.35	0.29	0.02	1.31	0.25	0.04	26.20	0.93	37.42	27.86	97.67
TM	**UA1119-m11**	3.40	0.30	0.03	1.30	0.25	0.03	26.93	0.90	37.98	28.32	99.43
TM	**UA1119-m12**	3.22	0.24	0.02	1.20	0.25	0.04	0.00	0.85	37.98	53.97	97.77
TM	**UA1120-m-1**	2.49	0.25	0.03	0.93	0.32	0.05	25.99	0.60	40.21	27.89	98.75
TM	**UA1120-m2**	3.39	0.29	0.03	1.31	0.25	0.03	26.55	0.89	37.98	28.21	98.94
TM	**UA1120-m3**	2.46	0.24	0.02	0.90	0.29	0.03	25.85	0.61	40.21	27.77	98.39
TM	**UA1120-m4**	3.39	0.29	0.02	1.31	0.24	0.03	26.35	0.89	37.42	27.90	97.84
TM	**UA1121-m1**	3.34	0.27	0.02	1.20	0.25	0.04	26.54	0.86	37.42	27.81	97.74
	AVERAGE	3.31	0.27	0.02	1.23	0.26	0.04	24.70	0.87	37.78	29.77	98.25
	STDEV	0.27	0.02	0.01	0.11	0.02	0.01	6.85	0.09	0.86	6.70	1.17
FI	**UA1045-IL1**	16.80	0.31	0.01	0.21	0.11	0.01	17.96	0.64	31.27	30.62	97.95
FI	**UA1045-IL2**	16.60	0.32	0.00	0.18	0.16	0.03	18.19	0.54	31.27	30.49	97.77
FI	**UA1045-IL3**	16.45	0.28	0.01	0.17	0.16	0.02	18.34	0.50	31.83	30.62	98.39
FI	**UA1045-IL4**	16.69	0.31	0.02	0.19	0.13	0.02	18,19	0.59	30.72	30.34	97.19
FI	**UA1045-IL5**	16.69	0.31	0.00	0.19	0.14	0.01	18.45	0.58	30.72	30.39	97.48
FI	**UA1045-IL6**	16.53	0.30	0.00	0.18	0.14	0.01	18.15	0.53	31.27	30.39	97.50
FI	**UA1045-IL7**	16.93	0.32	0.02	0.21	0.13	0.02	18.24	0.66	30.72	30.57	97.81

FI	**UA1045-IL9**	16.66	0.30	0.01	0.19	0.15	0.02	18.48	0.57	30.16	30.14	96.67
FI	**UA1045-IL10**	16.70	0.29	0.02	0.19	0.16	0.02	18.13	0.55	30.72	30.30	97.07
FI	**UA1045-IL11**	16.01	0.31	0.01	0.17	0.15	0.03	18.06	0.48	31.27	30.01	96.49
FI	**UA1045-IL12**	16.29	0.31	0.01	0.17	0.15	0.01	18.31	0.48	31.27	30.25	97.25
FI	**UA1119-IL1**	17.88	0.31	0.01	0.23	0.15	0.03	19.71	0.86	27.92	30.61	97.74
FI	**UA1119-IL2**	16.64	0.31	0.01	0.24	0.12	0.04	17.95	0.77	30.16	30.18	96.42
FI	**UA1119-IL3**	17.34	0.30	0.01	0.23	0.15	0.04	18.24	0.89	29.60	30.56	97.37
FI	**UA1119-IL4**	16.95	0.31	0.02	0.24	0.15	0.04	18.83	0.79	29.04	30.17	96.53
FI	**UA1119-IL6**	17.14	0.34	0.01	0.31	0.13	0.03	18.38	0.90	29.04	30.32	96.61
FI	**UA1119-IL7**	17.83	0.32	0.00	0.23	0.15	0.02	19.16	0.84	28.48	30.62	97.65
FI	**UA1119-IL8**	17.61	0.32	0.01	0.23	0.15	0.02	19.26	0.82	29.60	30.97	98.98
FI	**UA1119-IL9**	17.60	0.29	0.01	0.22	0.16	0.02	19.10	0.81	29.04	30.65	97.90
FI	**UA1119-IL10**	17.42	0.33	0.01	0.24	0.14	0.02	19.23	0.86	29.04	30.64	97.94
FI	**UA1119-IL11**	17.83	0.32	0.02	0.24	0.15	0.01	18.97	0.90	29.04	30.85	98.33
FI	**UA1119-IL12**	17.75	0.32	0.01	0.21	0.16	0.01	18.85	0.85	29.04	30.71	97.91
FI	**UA1120-IL1**	17.39	0.32	0.02	0.24	0.14	0.01	19.20	0.75	29.60	30.77	98.45
FI	**UA1120-IL2**	16.46	0.30	0.01	0.19	0.16	0.02	18.68	0.53	31.27	30.53	98.17
FI	**UA1120-IL3**	16.20	0.28	0.01	0.18	0.14	0.03	18.55	0.50	31.27	30.29	97.45
FI	**UA1120-IL4**	16.47	0.30	0.01	0.19	0.16	0.01	18.22	0.52	31.83	30.62	98.33
FI	**UA1120-IL5**	16.04	0.32	0.01	0.16	0.17	0.04	18.07	0.50	32.39	30.55	98.26
FI	**UA1120-IL6**	16.30	0.31	0.01	0.15	0.15	0.02	18.36	0.46	31.83	30.49	98.07
FI	**UA1120-IL7**	16.09	0.29	0.01	0.17	0.15	0.03	18.08	0.48	32.39	30.54	98.23
FI	**UA1120-IL8**	16.39	0.31	0.02	0.18	0.15	0.01	17.83	0.54	32.39	30.71	98.51
FI	**UA1120-IL9**	16.20	0.29	0.01	0.18	0.17	0.03	17.92	0.52	32.39	30.60	98.29
FI	**UA1120-IL10**	16.50	0.30	0.02	0.21	0.13	0.01	17.85	0.54	30.72	30.09	96.37
FI	**UA1120-IL11**	16.70	0.32	0.01	0.22	0.13	0.02	18.32	0.63	31.27	30.67	98.28
FI	**UA1121-IL1**	15.53	0.30	0.01	3.68	0.15	0.02	17.39	0.45	30.16	32.11	99.80
FI	**UA1121-IL3**	15.75	0.28	0.02	0.21	0.16	0.03	17.72	0.55	31.83	30.05	96.60
	AVERAGE	16.75	0.31	0.01	0.30	0.15	0.02	18.41	0.64	30.59	30.53	97.71
	STDEV	0.62	0.01	0.01	0.59	0.01	0.01	0.52	0.15	1.24	0.36	0.79
FI	**UA1119-IL5**	22.05	0.36	0.04	0.18	0.25	0.03	22.66	1.66	18.99	30.94	97.15
ILM	**UA1121-IL2**	29.49	0.30	0.01	0.00	1.16	0.02	33.14	0.08	2.23	30.73	97.16